THE IRON AGE

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Reading Matter Contents.....page 1848
Alphabetical Index to Advertisers " 196
Classified List of Advertisers " 186
Advertising and Subscription Rates " 1857

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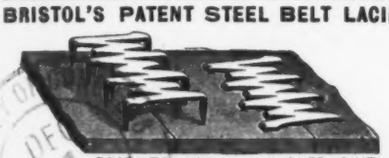

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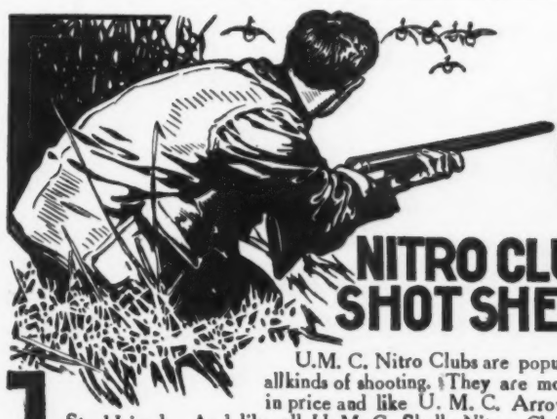

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See page 52

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SEE PAGE 25

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THE IRON AGE

New York, Thursday, December 17, 1908.

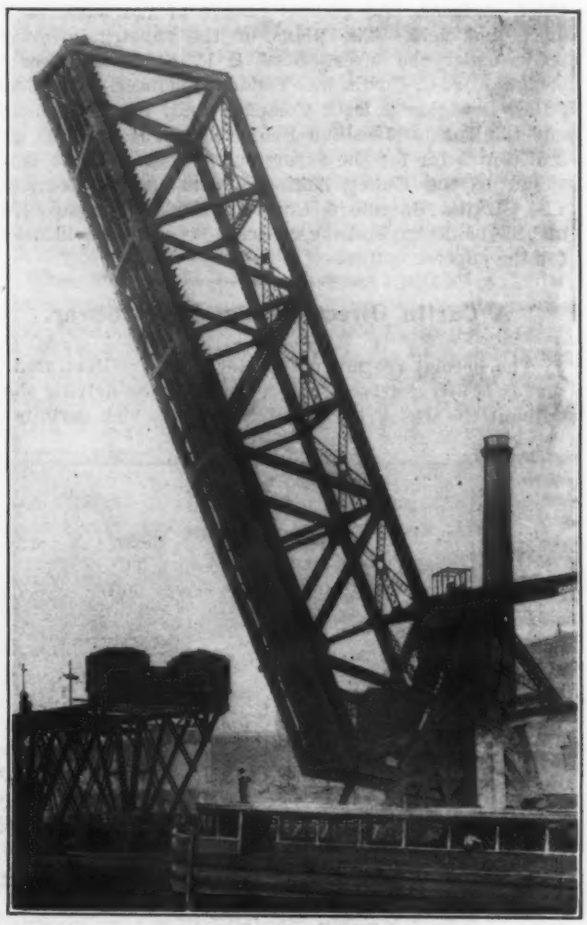
A Heavy Strauss Bascule Bridge.

Because of its size and the engineering problems involved in its erection the Chicago & Northwestern Railway bridge spanning the Chicago River at Kinzie street, Chicago, is a notable structure. The bridge is an unusually compact design of the Strauss trunnion bascule type and is said to be not only the largest bridge of this design built, but also the heaviest double track, single leaf bascule bridge in the world. The length of the bascule is 170 ft. from the center of the trunnion to the center line of the front end floor beam, in addition to which there is a 25 ft. 9 in. deck plate girder span on the north. The bascule is swung from the east side of the stream, and the entire load of the leaf when moving is carried on two hollow 28-in. shafts or trunnions mounted on a skeleton tower at a hight of about 36 ft. above mean water level. The weight of the leaf is counterbalanced by a reinforced concrete block, which is centrally mounted on 12-in. pins in the tail end of the trusses and kept in position by a pair of braced links connected by 7-in. pins to the counterweight at one end and to the top of the trunnion tower at the other. The live load on the span is not carried on the trunnions, but on two independent supports 26 ft. in front of it.

The bridge is operated by two struts, pin connected to the top chord and having racks meshing with pinions located on the top of the tower. These pinions are driven by a pair of 50-hp. electric motors, acting through two sets of gears, synchronized by a spur gear equalizer. Two sources of 500-volt direct current are provided; also an air motor and hand power drive, the great importance of the structure rendering it necessary to absolutely eliminate the possibility of failure of the operating mechanism. The two motors are provided with solenoid brakes and there is also a hand brake and an automatic emergency brake, which is both a hand and power brake. This brake is set automatically by the bridge itself when it reaches a certain limiting position.

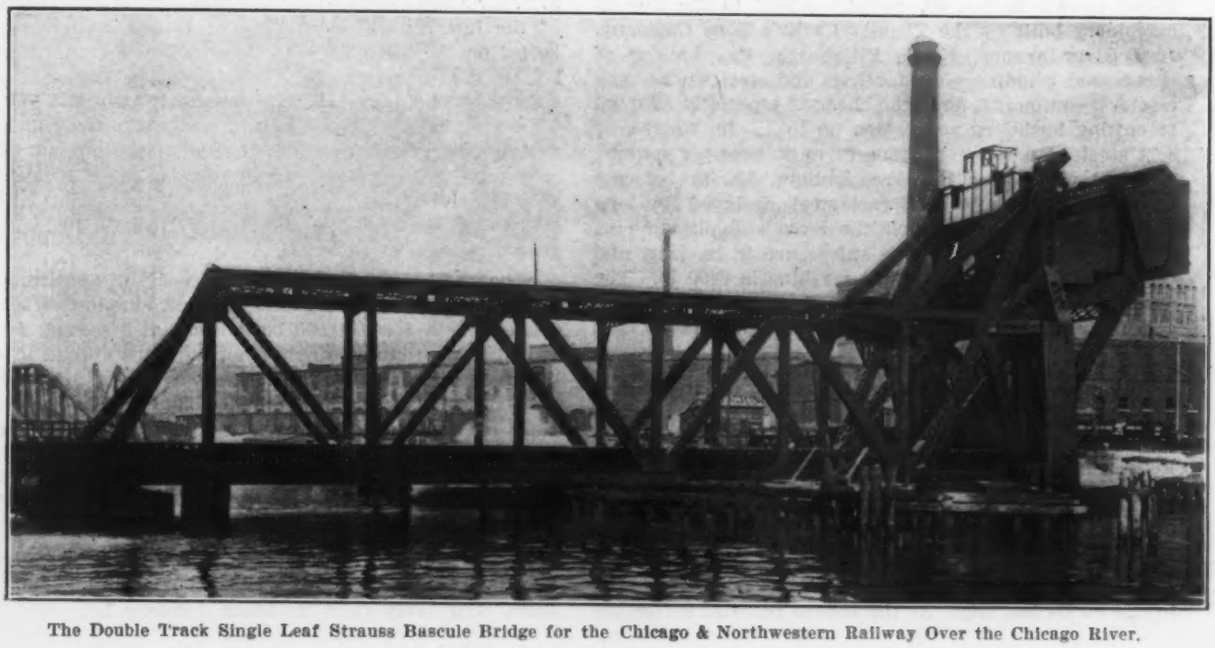
The machinery is controlled from the operator's house, which is of reinforced concrete and is located at the level of the top chord of the leaf. The usual standard electrical equipment of controllers, switchboard, signals, &c., is provided. The locking mechanism includes a front support for taking live load off the trunnions and a truss lock at the rest pier end. These are driven by a 3-hp. lock motor located at the center of the leaf, and the mechanism is such as to automatically cut out the motor when the parts reach their operative positions. The rail joints are mitered and are self-locking.

The trunnion pier is carried 115 ft. to solid rock, and the rest pier is founded on piles. The counterweight



Open Position of the Chicago & Northwestern Railway's Bridge.

weighs 1200 tons, and the bridge is so exactly balanced that no excess of power is required in opening or closing. The time of opening or closing the bridge is 1 min., which is accomplished with an average expenditure of about



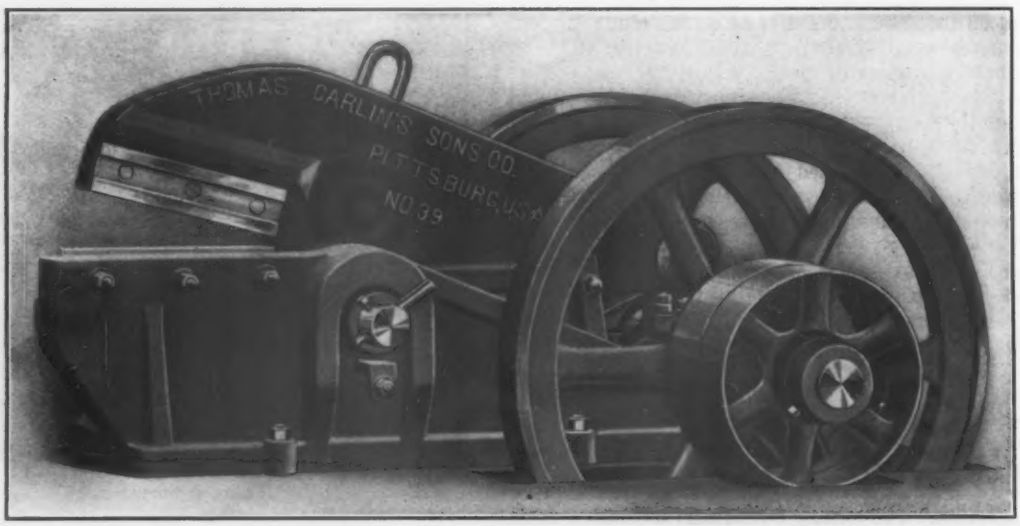
The Double Track Single Leaf Strauss Bascule Bridge for the Chicago & Northwestern Railway Over the Chicago River.

40 hp. The approximate number of openings per month is 1000 and the number of trains 260 per day. The opening or closing is accomplished in 1 min.

The bridge is an interesting example of heavy construction as applied to moving bridges, and notwithstanding the heavy traffic sustained the entire work of removing the old structure and erecting the new one was completed without interrupting either the river or rail traffic, except for a few hours while the old bridge was floated out of the way to allow the new bridge to be lowered. The work was carried out under the direction of E. C. Carter, chief engineer. W. H. Finley, assistant chief engineer, had general charge of the work in the office and field. The plans of the substructure were made under the direction of I. F. Stern, engineer of bridges. W. C. Curtis was resident engineer. The Great Lakes Dredging & Dock Company built the substructure and the Toledo Massillon Bridge Company was the general contractor for the superstructure, the erection being sublet to the Kelley Atkinson Construction Company. The Strauss Bascule & Concrete Bridge Company furnished the design and the general plans and specifications for the superstructure.

A Carlin Direct Driven Lever Shear.

The special feature of the lever shear illustrated is that it is direct driven from a crank on the driving shaft without the use of intermediate gears, which permits of less parts and increases the number of the cuts per minute for a given driving pulley speed. This is a new shear, known as No. 39, recently added to the line of machinery built by the Thomas Carlin's Sons Company, 1600 River avenue, N. S., Pittsburgh, Pa., builder of shears and grinding pans for iron and steel works, contractors' equipment, &c. The shear is especially adapted to cutting busheling scrap, &c., up to 1½ in. square, of soft steel, at a speed of from 70 to 80 cuts per minute. The bed plate, lever, flywheel, pulleys, &c., are of cast iron; the crankshaft is of cast steel, designed for long and continuous service, and the lever and pitman pins are of hammered steel. The knives are 18 in. long, and the approximate weight of the machine is 6400 lb. The shear shown is of the belted type, but can be furnished also for either engine or motor drive.



The Carlin No. 39 Lever Shear with the Crank on the Driving Shaft.

Manhattan Bridge Cable Stringing Completed.—On December 10 the last wire of the north cable was strung on the Manhattan Bridge, New York, and completed the work of laying the wires of the four huge cables which are to support the structure. A ceremony was made of the event. In the presence of a number of invited guests Mayor McClellan started the motor in the hauling plant at the Brooklyn end of the bridge, drawing the sheave carrying the galvanized steel wire across the bridge on its last trip. As the sheave traveled across the river with an American flag attached to it the boats in the river blew their whistles in salute, and flags were unfurled on the towers of all the bridges. The 37,888 wires composing the four cables, aggregating a total length of 24,000 miles, were strung in just four months, and only six months have elapsed since the work of building the foot bridges for the workers was begun, which establishes a new record in bridge building. The 37 strands of each cable are now being bound together and then will be forced into cylindrical shape by hydraulic pressure. After this work has been finished the construction of the steel suspenders, braces and roadways will begin. The entire superstructure of this, the greatest and largest of suspension bridges, it is expected, will be completed in about 12 months. Those who witnessed the ceremony Thursday, besides the Mayor and Bridge Commissioner Stevenson, were the engineers of the Bridge Department, President Frank B. Robinson of the Carbon Steel Company, which furnished the wire, and officers of the Glyndon Contracting Company, which performed the work of stringing the cables.

The Rivers and Harbors Convention.

The National Rivers and Harbors Congress, which met in Washington last week, re-elected Joseph E. Ransdell of Lake Providence, La., president, and J. F. Ellison of Cincinnati, treasurer and secretary. The 38 directors were re-elected. Forty-four vice-presidents, one from each State represented, were elected by State delegations.

The resolutions adopted by the convention provide, first, for a bond issue of $500,000,000 for the improvement of the interior waterways of the United States, to be issued on the same lines as those of the Panama Canal bonds, the money to be available when necessity demands; second, they call upon the Congress of the United States for immediate action in the way of appropriations to complete certain work already begun and to inaugurate new work as recommended by the board of army engineers; third, they demand a liberal appropriation for continuing contracts on rivers and harbors during the present session of Congress.

The resolutions further empowered the appointment of a committee to draft bills for introduction, first, to provide for a $500,000,000 bond issue, and, second, for a commission to study waterways conditions abroad in order that the best waterway improvements of foreign countries may be used by the United States in its treatment of its own waterways. Individual projects were discussed at great length, but it was finally agreed that it was best to have a policy first and the projects afterward.

Anna Furnace of the Struthers Furnace Company, Struthers, Ohio, now out of blast for relining and repairs, will likely start up about January 1.

Milling Automobile Cylinders.

Endeavor to build high grade automobiles to sell at moderate price has brought to machine tool builders numerous problems in the way of cheaply producing automobile parts in quantities. A complication is that

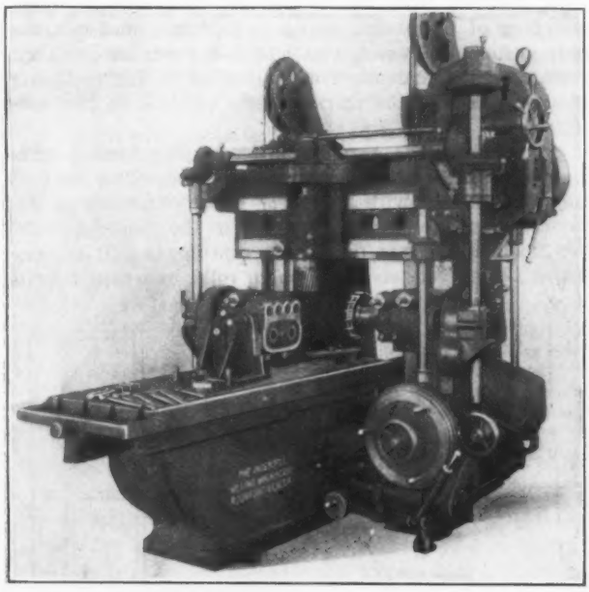


Fig. 1.—An Ingersoll Three-Head Milling Machine Finishing an Automobile Engine Twin Cylinder at One Setting.

the machines must not be of such a special nature that they cannot allow for changes in the design of the engines and transmissions. In other words, they must have a wide range of adaptability so that they will not have to be discarded when the design of the parts they produce is modified. A machine of this character is the three-head milling machine, made by the Ingersoll Milling Machine Company, Rockford, Ill., one of which is shown

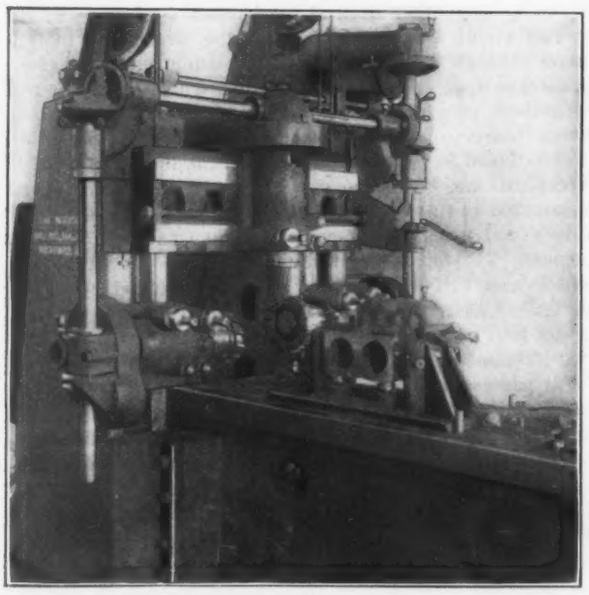


Fig. 2.—View from the Opposite Side, Showing the Other Faces Finished.

in the illustrations finishing automobile cylinders. It is adapted for the milling of cylinders, engine bases, crank cases, transmission cases and smaller parts.

The example of work shown is a job especially suitable for a machine of this class, as it gives opportunity for employing all heads at once. The milled surfaces may be plainly seen in the illustrations. Although but one jig is shown, the universal practice is to have as many as the table will hold. The jigs are simple, yet are designed to facilitate the handling and setting of the cylinders as much as possible. With properly designed jigs the machine is capable of milling over 50 twin cylinders of the type shown in 10 hr., producing good finished surfaces. The machine is driven by a 15-hp. motor and weighs about 18,000 lb. A number of them are now used by manufacturers of automobiles and automobile engines.

A Colossal Roller Thrust Bearing.

Antifriction bearings in one form or another have done much to increase the economy of operating machines of various kinds, but nowhere has their application been carried out so completely as in automobiles. In nearly all places where formerly plain types of bearings were used in automobiles there are now substituted ball or roller bearings. Appreciation of this fact leads one to conjecture to what extent they may not ultimately find their way into other fields. They are now available in a wide variety of kinds and sizes, ranging in price from 2 cents to $7500 for a single bearing, and capable of carrying loads from a few ounces, running at 30,000 rev. per min., to loads of 1,500,000 lb. at 100 rev. per min. and 250,000 lb. at 500 rev. per min.

What is said to be the largest antifriction thrust bearing ever made is over 4 ft. diameter, weighs nearly 4 tons and carries a load of 1,500,000 lb., or 750 tons, at 100 rev. per min., and was made by the Standard Roller Bearing Company, Philadelphia, Pa. Its unusual capacity may be better realized when it is stated that it supports a weight equivalent to an ordinary office building of seven stories, weighing 750 tons, or a three-masted coasting schooner of the same burden; if piled one above another, it could uphold a coal train of from 35 to 40 cars, averaging 20 tons of coal to the car; were it possible to mass them in the proper formation, it would carry the weight of 10 regiments of infantry, composed of men averaging 150 lb. each, or the combined weight of a procession of 600 automobiles of ordinary size, 2500 lb. each.

Submarine Boat Contracts Awarded.

Two of the submarine boats authorized at the last session of Congress are to be constructed at one of the Government navy yards, if satisfactory arrangements as to shoprights for construction with one or more of the submarine boat companies can be made. This is a new departure in naval construction. The remaining six authorized by Congress will be built by private firms. The successful bidders for these six boats, contracts for which were awarded December 10, were as follows:

The Electric Boat Company, two vessels at $450,450 each, and two vessels at $438,900 each, all four vessels to be delivered on the Pacific Coast.

The Lake Torpedo Boat Company, one vessel at $410,000, to be delivered on the Atlantic Coast. This vessel will be constructed by the Newport News Shipbuilding Company.

The American Laurenti Company, one vessel at $437,500, to be delivered on the Atlantic Coast, and to be constructed by the William Cramp & Sons Ship & Engine Building Company, Philadelphia.

Last February the Navy Department awarded a contract to the Lake Torpedo Boat Company for the construction of a submarine. The various parts have been assembled and the boat will be constructed by the Newport News Shipbuilding Company.

The Cleveland Foundrymen's Association.—The annual meeting was held December 11. The reports of the treasurer and secretary showed the organization in good condition. Secretary Frankel said in his report that the output the past year of the foundries belonging to the association, which include only those that make heavy castings, had been barely 40 per cent. of the output in the preceding year. The question of proposed changes in the tariff was discussed, but no action was taken. The old officers were re-elected as follows: W. C. Bruce, Bowler Foundry Company, president; O. A. Saeltzer, Loew Mfg. Company, vice-president; C. J. Snow, MacBeth Iron Company, treasurer, and Philip Frankel, secretary.

The Continuous Sheet Mill Patents.

The Decision in the Donner-Bray Infringement Case.

In the United States Circuit Court of Appeals for the Third Circuit. No. 31, October term, 1908. Percy E. Donner *vs.* the American Sheet & Tin Plate Company. Before Gray and Buffington, circuit judges, and Cross, district judge. Buffington, circuit judge. Filed November 20, 1908.

In the court below, Percy E. Donner, assignee of patent No. 620,541, granted February 28, 1899, to W. H. Donner for rolling black plate, filed a bill charging infringement against the American Sheet & Tin Plate Company. In an opinion reported at 160 Fed. Rep. 971, that court held the fourth claim thereof valid and infringed. From a decree in pursuance thereof the latter company appealed to this court.

The General Practice of Sheet Rolling Described.

This patent concerns sheet rolling mills. In such mills the general and almost universal practice, both prior to this patent and since, was and is, as recited in the patent, as follows: "To feed the bars through a set of two-high rolls and then return them over their tops for the next pass, the screws of the rolls being successively adjusted to bring the rolls closer together for each pass. This operation is continued until the iron is too cold to roll, when the packs are returned to the furnace, and, being reheated, are then given a second series of reductions until they are rolled sufficiently long for doubling, when they are doubled and returned to the furnace, these operations being continued until the desired gauge is obtained." The succeeding stages of the operation need not be detailed. The object the patentee had in view is stated in the specification as follows:

> The object of my invention is to provide a plant and method of working the metal whereby the time and labor consumed in passing the metal back over the rolls is obviated and the iron reduced more rapidly and without changing the adjustments of the rolls, and to obtain a continuous plant wherein the various sets of rolls are maintained at substantially the same temperature by reason of the metal passing therethrough in a continuous or regular manner, thus giving more accurate sheets and reducing the liability of breaking the rolls.

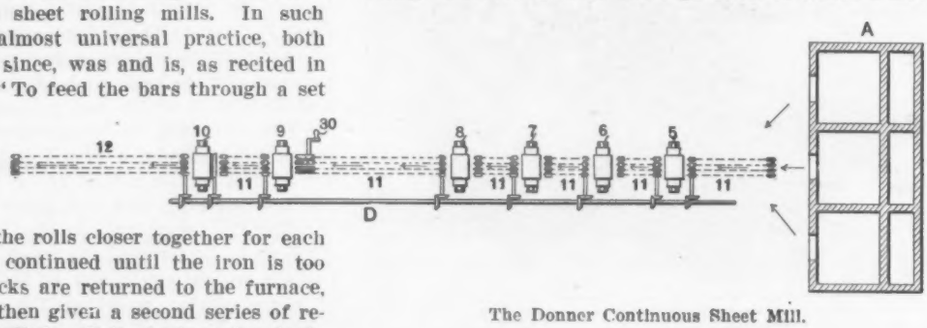
It should here be stated that after the sheets are reduced in gauge by rolling back and forth four times, which is the customary number of initial passes, they are laid one upon the other to form packs. This process is called matching and is an intermediate operation in sheet rolling. The entire operation of sheet rolling, including the preliminary rolling of individual sheets and the subsequent rolling of packs, Donner sought to accomplish by a continuous mill, which is one where the entire process of rolling goes forward continuously and without subjecting the sheets to any return over the rolls, so that they may repass through them. Complainant's expert tersely defines a continuous mill as a "plant wherein a separate set of reducing rolls is employed for each reduction." By this process it will be seen there is no adjustment of the rolls for the several passages as in the old process, but a single adjustment takes place for the single passage which alone is made through each stand of rolls. The advantage incident to a use of a continuous mill the patentee thus enumerated:

> The advantages of my invention will be apparent to those skilled in the art, since the labor and time of reducing the metal are greatly decreased, a greater number of reductions can be given before reheating the pack and the number of workmen is materially reduced. Since I use one pair of rolls for each reduction instead of making several reductions on one mill, the reductions are more uniform and accurate than where the adjustments are being continually changed. The adjustments of the tension of the rolls which regulates these reductions are made easy for an unskilled workman, whereas the adjustment by the ordinary method heretofore used requires the close attention of a skilled roller. The packs being fed to the rolls in a continuous and regular manner, the rolls are kept at a substantially uniform temperature, and hence at about the same contour or shape, giving more accurate sheets than formerly and avoiding breakage of the rolls by reason of contracting and expanding thereof.

The Donner Mill.

The patentee's particular form of mill, shown in the accompanying cut, consisted, in so far as is now pertinent to note, of four sets of two-high rolls set tandem, with feed tables or conveyors between each set. At a sufficient distance from the last of the four sets, to allow matching of the sheets, which individually had had the four customary passes, two additional sets of two-high rolls were set tandem. The process up to and including the operation of the last two sets of rolls is thus described:

In the drawings A represents a heating furnace having chambers in which the bars are heated. This furnace may be provided with one or as many chambers as desired. When the bars are brought to the proper heat in this furnace they are taken to a continuous mill D, consisting of several sets of two-high rolls, of which I have



The Donner Continuous Sheet Mill.

shown six sets arranged in tandem, numbered, respectively, 5, 6, 7, 8, 9 and 10, each set of rolls being provided with a feed table or conveyor 11, which is shown as consisting of a series of sprocket chains passing over positively driven sprocket wheels at their ends, though other forms of positively driven feed tables may be employed if desired. I have shown the sprocket wheels at one end of the feed table chains as mounted upon a shaft having bevel gear connections with a shaft, 28, extending alongside the continuous mill, though these chains may be driven by any other desired mechanism.

The metal being placed upon the first feed table, passes through the set of rolls 5, and being reduced therein, merges upon the second feed table, which carries it to the rolls 6, in which it receives a further reduction, and thence passes on in a similar manner through the sets of rolls 7 and 8. The next set of rolls, 9, is spaced a sufficient distance from the set 8, so that the plates may be matched at this point if desired, the feed table between rolls 8 and 9 being correspondingly lengthened for this purpose. To stop the plates upon the table between the rolls 8 and 9, I show tilting fingers, arranged between the chains near the end of this table and arranged to be swung into upper position to stop the metal or into lowered inoperative position by a lever 30. From roll 9 the metal passes through set 10, and on emerging from this set of rolls the metal, which has now been reduced to a suitable gauge for doubling emerges upon a feed table 12.

Upon this device, claim four, which reads as follows: "In a plant for rolling black plate, a continuous train in which two of the sets of rolls are sufficiently removed from each other to allow the bars or sheets to be matched between said sets of rolls, substantially as described," was granted. The proofs in this case satisfy us of the great advantages and desirability of the continuous rolling of sheets, but they equally satisfy us that this patentee neither disclosed anything novel in his patent nor showed successfully means of a continuous sheet rolling.

The Howell Mill Antedates the Donner Mill.

The continuous mill of Howell, described and illustrated in *The Iron Age* of August 13, 1891, embodied a device containing all the elements of Donner's fourth claim. In this publication was a horizontal section which showed four sets of two-high rolls, which Howell called a blooming mill. Two of these sets were each mounted in separate, parallel, reverse tandem form. The published description of Howell's process is as follows:

With the object of eliminating the item of cost by skilled labor, Mr. Howell proposed a continuous train with its blooming mill, which would be in charge of one skilled man, the other help needed being common labor. In the blooming mill the slab or ingot is taken from the furnace and is passed through the first set of rolls, and is put back through a second set, receiving two reductions for each movement until reduced to ½-in. thickness. It then goes to the shears, is cut and packed, and at the same heat is taken to the continuous train on a buggy. The train is built in detachment, so as to have control of the speed of the several groups, the strip to leave one set of rolls at about the same time it enters the next in order to avoid the complications often incident to continuous mills. The entire system of rolls is in one plane and there is no lifting of the piece, and only the lateral movement of it from the first to the second set of rolls of the blooming train. The blooming and continuous trains are placed in close proximity. The six engines required from this method would not be costly, since the train may be made to run at one-half or one-third of the speed of the engine.

The trouble in gearing a continuous train from one engine has been that the speed of each pair of rolls cannot be changed at will to accommodate the stretch of the piece. By having the rolls detached in groups, the engines may be speeded to suit the elongation of the strip. With this train strips of suitable widths for making cans may be rolled in long lengths and coiled, instead of boxing them. While the cost of skilled labor alone on a tin sheet mill by present methods is $12 for No. 30 W. G., Mr. Howell estimates the cost of this method at not more than $2.

From this will be seen that roll No. 1 is a two-high stand through which the sheet passes once, goes forward to rolls No. 2, and passes once. From No. 2 stand the sheet is passed laterally to stand No. 3, through which the sheet passes once and goes forward to rolls No. 4, which it passes once. This is the forward process characteristic of a continuous mill. There is no return or passes of the sheet a second time through the same stand of rolls, and consequently no readjustment of the rolls to make a thinner gauge. This is not only clear from the diagram, but as the article says, "The entire system of rolls is in one plane and there is no lifting of the piece, and only the lateral movement of it from the first to the second set of rolls of the blooming train."

After receiving the customary four passes the sheet is reduced to a size suitable for matching, and Howell's plan showed space where such matching could be done before the metal passed in pack form through the other rolls of his continuous mill. From this it will be seen that each element of Donner's fourth claim was present in Howell's device, namely, a continuous mill, two sets of rolls, sufficient space between the sets to permit matching. Howell's device, if used after Donner's patent, would clearly infringe the fourth claim, and being earlier it as clearly anticipates. Moreover, as stated above, the proofs satisfy us that the patent in suit disclosed no practical method by which sheets could be successfully rolled in a continuous mill. It is true the specifications claimed sundry advantages would result from the use of a continuous mill, but the patentee disclosed no means by which these results could be secured and the use of continuous mills has shown such predicted results did not follow.

Why Packs Stick When Rolled on a Continuous Mill.

The proof is that in continuous rolling the packs stick and produce scrap to such a degree as to make such rolling commercial unsuccessful. Cronemeyer, a sheet manufacturer of great experience, says:

We always knew that packs of sheets could be rolled in a continuous mill, but the question was not whether we could roll it but whether we could bring out the product economically. The trouble with us always was to get out a product that wouldn't stick. We have had the theory in that respect all right for a long time, but in practice it won't work out. It is the continuous rolling of the pack without creating too much scrap that has been the question which, as far as I know, no one yet solved to-day.

Indeed, this is proved by complainant himself, who, in speaking of a mill of respondent's alleged to use the patented process, says: "The scrap in the Monongahela continuous mill is very much in excess of that in the practice of the old-fashioned single stand mills. The difficulty of roll contour had to be contended with, and as it has taken more or less experimenting to determine just how the rolls of a continuous mill should be turned, there was much scrap produced through what you might say were destroyed packs. I have seen numerous packs stick together so tight that they could not be opened and had to be sheared up as scrap." Of the difficulties attending the use of a continuous mill, Cronemeyer says:

We took packs of sheets and rolled them on the stands of rolls, which we had standing side by side, moving them from the first pair, second pair, third pair, and so on, and giving them a pass through the different sets of rolls. Then we brought out the finished pack and tried to open it—that is, tried to separate the sheets. We found that nearly all of them were so tightly stuck together, or nearly welded together, that we could not separate them. This circumstance, we found, was due to the fact that the rolls in the different stands had a different contour, and that pressage was exerted on the sheets in the various places of the sheets, and also to the fact that we did not separate the sheets during the process of rolling, which is customary to do when we roll on the single stand mill, but which we knew could not be done if we would roll on a continuous mill. The effect would be an excessive amount of scrap and defective sheets, and the process would not be economical—that is, the advantages gained by the greater product which a continuous mill can put out would be largely offset by the amount of scrap.

This roll contour difficulty at present is apparently a fundamental obstacle to successful continuous rolling. Cronemeyer thus explains:

The surface of the rolls also, we may try to get them exactly, will always vary more or less, nevertheless, because the hot metal coming in contact with different rolls or with the different metal in these sets of rolls will cause different effects. In that way the one roll may have a slightly elevated portion, which does not exist in the next roll in the same place, and whenever these elevations exist the sheets will be pressed harder than in other places. The friction and consequently the heat is hotter in these places, and consequently the sheets will stick in the spots that have come in contact with such elevation in the second or third roll, while if they pass through the same roll the pressure on that same line of the sheet will always remain the same; but all of this is only a theory of mine which I could not positively prove, but the fact remains that sheets rolled in the manner described will stick closer together than in the ordinary way.

So also a very clear statement of the roll contour difficulty is given by Julian Kennedy, one of the foremost and most reliable of mill engineers in the profession, who says:

Professor Langley, in his answers to Q. 9, points out some of the difficulties in rolling tin plate, the most important one being the difficulties incident to maintaining the rolls at a proper heat so as to preserve their cylindrical form. He speaks of the rolls being turned up slightly concave, so that when in regular work the center of the roll will become somewhat warmer than the ends, the roll will acquire as nearly as possible a truly cylindrical form; and claims in general that by using tandem mills the rolls can be kept in a more uniform condition than where the rolling is done on a single stand of rolls. Unfortunately, in practice this does not work out, for the simple reason that in the use of a single stand of rolls it is possible for a certain error in contour to exist without doing very much harm, whereas in the pack as it nears finishing has one pass through a pair of rolls which is either too hollow or too convex, and the next pass through a perfect pair of rolls, very much heavier pressures will be set up in this latter pass, either on the edges or the center of the pack, as the case may be, than would be the case if the pack was sent a second time through the first pair of rolls. In other words, if a pair of rolls be, for example, slightly too much convex and a pack be put through these rolls several times in succession, screwing down on the roll each time, there will be manifestly much less tendency to extreme local pressure than there would be where one pass of the pack is through such convex rolls and the next pass through a truly cylindrical pair of rolls.

If we take the case of one pair of rolls convex and the next succeeding pair of rolls concave, this bad action is very much intensified, so that with a given error the contour of one set of rolls and an opposite error in the succeeding one—that is, one convex and one concave—the abnormal pressure developed in certain parts of the pack and the tendency toward sticking and buckling incident thereto will be much greater than in the case where a single pair of rolls is used, even if the error in their contour were two or three times as great as in the case of the tandem rolls.

Again he states that with a single pair of rolls it is necessary for the roller to watch carefully and so manipulate the rolls as to keep their contour as nearly correct as possible, which in some cases involves allowing the rolls to cool slightly by slowing the operation of the mill. In the case

of tandem rolls, it often happens that one set of rolls should be cooled a little in order to correct its contour, while the succeeding set of rolls should be warmed up a little, or *vice versa*. For this reason, while sheet mill men have never doubted that it would be possible to roll packs on different sets of rolls in succession, they have been doubtful as to whether the well-known advantages of increase in output and lightening of manual labor would compensate for the increased amount of scrap and wasters produced by giving each pass in the reduction of a pack in an independent set of rolls; and my observation and all the information that I can gather tell me that up to the present all experimenting which has been done in this direction has not overcome this trouble to the extent of saving more cost due to the more rapid work and less labor as it lost owing to increase sticking and buckling of the plate.

Kennedy sums up his conclusions by saying: "It is my understanding that they have not as yet been able to show any commercial advantage in the use of these mills over that obtained by the use of the older style of mills where the pack rolling is done by a single stand."

The Proper Roll Contour Not Solved.

Moreover, it is to be noted that the patentee in his specification as heretofore quoted claimed that proper roll contour was secured by the uniform temperature incident to the use of a continuous mill. In that respect his specification says: "The pack being fed to the rolls in a continuous and regular manner, the rolls are kept at a substantially uniform temperature, and hence at about the same contour or shape, giving more accurate sheets than formerly and avoiding breakage of the rolls by reason of contracting and expanding thereof." But this statement disclosed nothing new, for in his prior patent No. 615,535, Donner had made substantially the same statement. There, speaking with reference to the irregular temperature and roll contour and of the effect of rolling the packs in a continuous mill, he said:

My invention overcomes these difficulties, and it consists in roughing in one mill and then passing the metal packs in a regular or continuous manner through a finishing mill or mills, so that the finishing rolls will be continuously maintained at about the same temperature. It also consists in passing the metal continuously or regularly through the roughing rolls, thus maintaining these rolls continuously at the same temperature, as well as in passing the metal simultaneously or continuously through both roughing and finishing rolls.

Now concededly the patent gives no instructions whatever upon the contour of the rolls or how they should be turned to get good results, and when complainant was inquired of on that point his only answer was: "I think any one skilled in the art would appreciate the fact that some experimenting along this line would be necessary in actual practice in order to determine the exact amount of concavity in various sets of rolls to produce the finest possible results."

Taking this as the best and strongest answer that can be made of the statutory requirement that the patentee shall make a written description of his invention or discovery, "in such full, clear and exact terms as to enable any person skilled in the art to make, construct and use the same," we are of the opinion in the face of strong and uncontradicted proof of those skilled in the art that the problem of roll contour has not been solved, that the disclosures of this patent are not of the practical and useful character the law makes the consideration for the grant of a patent monopoly.

The evidence satisfies us the problem of continuous sheet rolling was neither solved nor disclosed by this patent, and that to sustain this patent would not be to reward invention, but to block further experiment and development, for here, as was said in Deering *vs.* Harvester Works, 155 U. S. 286, "In view, not only of the prior devices, but of the fact that his invention was of doubtful utility and never went into practical use, the construction claimed would operate to the discouragement rather than the promotion of inventive talent."

This patent has left no impress on the art; the patentee nor those under him have built and operated such mill and proved its utility. While the respondent has constructed two continuous sheet mills, one has ceased operations and the other, while improved by important devices outside the elements of this claim, is evidently experimental in character in that its use emphasizes the failures and defects of Donner's device, which has left no impress on an art which still continues in sheet rolling to employ the methods of the old practice. In accord, therefore, with the views expressed above, we hold the fourth claim invalid, the decree below be reversed and the case remanded with instructions to dismiss the bill.

Foundrymen Act on Pig Iron and Coke Shortages.

At a monthly meeting of the New England Foundrymen's Association at the Exchange Club, Boston, December 9, recommendations were adopted as a result of the report of the Committee on Shortages in Shipments of Pig Iron and Coke, as follows:

Pig Iron: We recommend the suggestion of transportation companies—that buyers contract for their iron f.o.b. delivering points.

Coke: We recommend in view of the fact that the principal carriers and shippers of coke agree to the above conditions (see printed report of the committee), that the consignee who wishes to insure himself against loss should have the material weighed on the railroad scales nearest destination, cars to be thoroughly cleaned out, and empty car weighed for the actual tare. Upon shortage being found, claim should be made on the delivering railroad for the amount of excess freight charged, and on the shipper for the coke.

The secretary was instructed to send to each member of the association and nonmembers among the foundries interested a copy of the recommendations, urging cooperation in their adoption.

The question of the tariff on pig iron was brought to the attention of the meeting, and it was voted that the entire matter be placed in the hands of a committee of five to investigate and report at the next meeting. Charles T. Colvin, Colvin Foundry Company, Providence, R. I., was made chairman of the committee. After dinner Walter M. Saunders, Saunders & Franklin, Providence, gave a very interesting talk on the manufacture of coke, illustrated by stereopticon views. It was announced that the annual meeting of the association will be held January 13. An entertainment will be provided and several prominent men will be included in the list of speakers.

Advances in Freight Rates January 1.

A Washington dispatch of December 10 announced that on January 1 westbound transcontinental rates would be increased 10 per cent., while the same rates from West to East would be raised 18 per cent. Eastern railroad officials said that the increases as announced applied only to shipments between Chicago and the Pacific Coast, and that nothing definite would be done about the proposition to increase rates in the East until after the first of the year. On December 12 dispatches from Washington stated that on January 1 an average increase of 10 per cent. would take place on freight rates from the Atlantic Coast to the Pacific. It was given out after the meeting of presidents of Eastern roads last summer that three roads at least had decided to join the movement for a 10 per cent. increase. Recently associations of shippers have asked for conferences with railroad officers relative to the proposed increases, but in one case it was replied that the entire matter was in such uncertainty that a conference was not warranted. The secrecy which attends the movement for advances is not understood or relished by shippers.

The Supreme Court of the District of Columbia decided December 11 that an employee of a railroad injured in the service of the company cannot barter away his rights under the employer's liability act by signing a contract that he was to receive only a certain amount as damages in the event of injury occurring to him in the course of employment. This decision was made in the case of a brakeman who was injured and sued for $10,000 damages. The court holds that the supposition is that the employee assents to the contract under the stress of his situation by reason of his necessity to secure employment.

The Northern Type S Electric Motor.

A reversible, variable speed motor was the object sought in designing the new type S motor built by the Northern Electrical Mfg. Company, Madison, Wis. The method of obtaining variable speed is that of field control used in earlier of the company's machines, of which the motor with a 4-to-1 range of speeds brought out in 1903 was the pioneer. To make such a motor reversible, how-

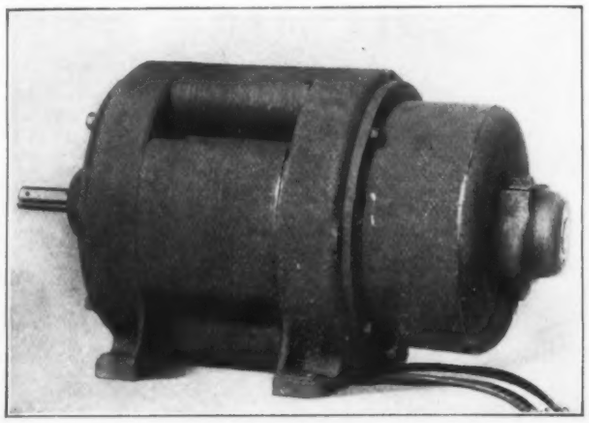


Fig. 1.—Fully Inclosed Type S Variable Speed Reversible Motor Made by the Northern Electrical Mfg. Company, Madison, Wis.

ever, required means for eliminating the sparking that occurs in an ordinary motor when reversed unless the brushes are shifted to avoid it. The device as finally hit upon to prevent sparking is interesting for its simplicity, because it avoids extra windings or additional poles, the sole function of which is to correct the distorted lines of force in the magnetic field. Briefly, the aim has been to increase the ease with which the desired lines of force through the field poles may be established and to obstruct the undesirable lines of force set up by the armature

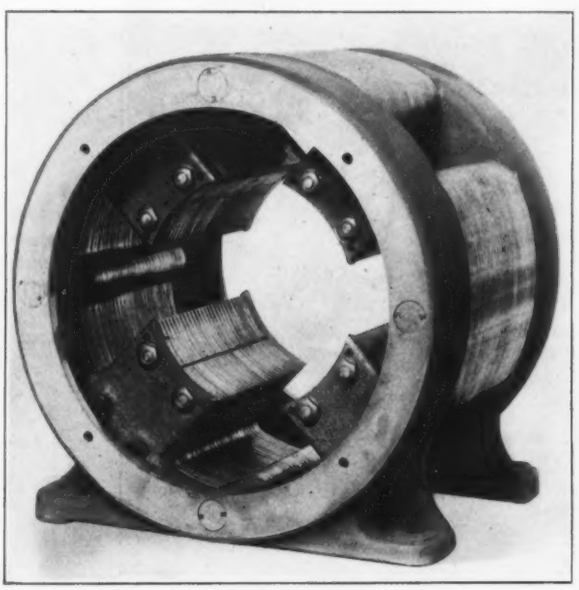


Fig. 2.—The Field of the Type S Motor, Showing Laminated Construction.

windings. An air space being the most effective hindrance to the setting up of lines of force, the required end was attained by dividing the field poles through their central radial planes. It is claimed that the practical results from this construction in the accomplishment of sparkless commutation have exceeded the expectations of the designers.

Fig. 1 shows the general appearance of the motor complete; Fig. 2 is a view of the assembled field magnets and frame before the insertion of the field winding, and Fig. 3 shows a motor of this construction incorporated in a grinder or buffer, the extended shaft of the motor forming the spindle for carrying the wheels.

The field as may be seen in Fig. 2 is made of laminated soft sheet steel stampings which furnish a material excellently adapted to the purpose. The advantage of steel laminated construction is appreciated as witnessed in its use in the construction of almost all motor armatures at present. When used in the field as well as in the armature it enables the motor to be made smaller as a whole, since the better magnetic qualities of sheet steel, as compared with either cast iron or cast steel, enables the cross section of the magnetic paths to be smaller for a given magnetic reluctance. There are also eliminated the blowholes and other defects which may enter into cast materials. Also as the laminated construction prevents eddy currents being set up in the pole faces, there is less waste of energy from this source which manifests itself in the form of heat, consequently the motor when made fully inclosed as shown in Fig. 1

Fig. 3.—A Grinder and Buffer Embodying the Type S Motor.

may be run with almost as great a load as when opened to air currents through the holes in the bonnet. In fact, the only difference between the inclosed and open types in which this motor is built is the placing of a band around the openings in the bonnet which covers the brushes and commutator. The thinner section of the field and the greater surface afforded by the recesses in the poles also helps in the dissipation of heat created within the machine, which is another reason for the company's claim that the power rating for the inclosed type of this motor is more nearly that for the open type than that of any other design of motor.

While particularly intended for use where variable and reversible speeds are required as in the driving of machine tools, the motor is also excellently adapted for constant speed work, and the same construction can be employed to advantage in generators, motor generators and the like.

The armature construction is the same as that of former Northern motors. The armature windings are machined formed coils, and the commutator is of hard drawn copper bars. A box type of brush holder is used with easy means of adjusting the tension on the brush or removing it for inspection. The bearings are of self-oiling type and have liberal surfaces and ample capacity. The type S motors are built regularly up to 50 hp., with a wide range of adjustable speed ratings up to 6 to 1 and in excess when required.

An Interesting Link-Belt Handling Equipment.

An easier and more effective handling of its finished product, oilcloth and linoleum, is one of several improvements recently made in the Farr & Bailey Company's plant, at Camden, N. J. An automatic lift and lowerer of the tray type, designed and built by the Link-Belt Company, Philadelphia, Pa., has superseded hand methods in the transfer of linoleum and oilcloth rolls between the rolls on to the stationary receiving arms, from which they are picked off by the ascending trays, carried between the head wheels, Fig. 1, and automatically delivered, on the descending run, either to the first or second floor at the rate of 120 an hour. Unloading is effected by inclined arms, or fixed fingers, which extend into the openings of the descending tray arms and roll the linoleum off on to the receiving platform, as may be seen in Fig. 2, after which it is boxed for shipment or storage. The receiving arms at the second floor are hinged, as shown in Fig. 3, so that they may be thrown back to

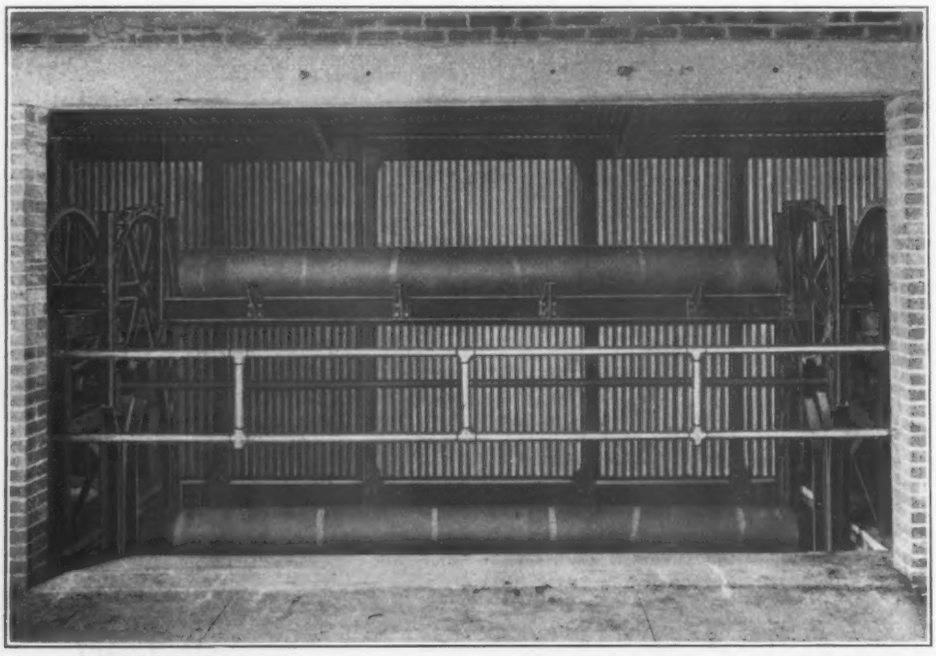


Fig. 1.—Top of the Elevator, Showing One Loaded Tray and Another Load Ready to Be Taken Up.

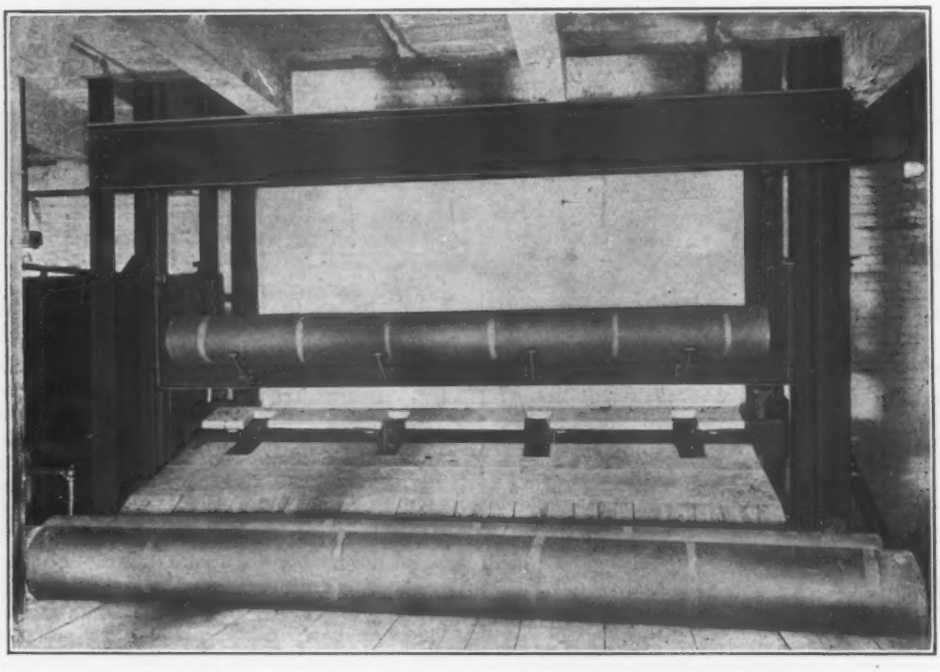


Fig. 2.—Delivery Point, Showing One Load About to Be Discharged.

A LINK-BELT ELEVATOR IN THE FARR & BAILEY COMPANY'S OILCLOTH WORKS.

various departments. The rolls range from 6 to 12 ft. long, weighing from 300 to 500 lb., and were formerly lowered by cable elevator from the stockroom, on the fifth floor, to the storing and shipping departments, on the second and first floors. This was a slow process, the weight of the rolls retarding quick transfer, so that at best only 50 rolls an hour could be handled; this work also called for the services of four or five men in loading, unloading and trucking to and from the hoist.

With the new apparatus it is only necessary to push permit rolls to pass for delivery to the stationary arms at the first floor.

The elevator is 58 ft. 4 in. high between the centers and is constructed of two strands of Link-Belt No. 1250 chain fitted at intervals of 17 ft. with trays 13 ft. long and running over 38-in. sprocket wheels. The ascending and descending runs of the chains travel between angle iron guides fastened to the structural steel supports, as shown in Fig. 3.

Fig. 4 shows a detail of the trays. These are made of

I-beam cross bars suspended from the chain by channel iron hangers, and are fitted on each side of the web with cast iron arms, which form a cradle for the roll. As may be seen from the end view, the construction is designed to accommodate rolls of different sizes. A 4-hp. General Electric motor supplied with 220-volt two-phase 60-cycle alternating current and provided with a starting compensator is connected to the elevator head shaft through a Hindley worm gear, made by Morse, Williams & Co.

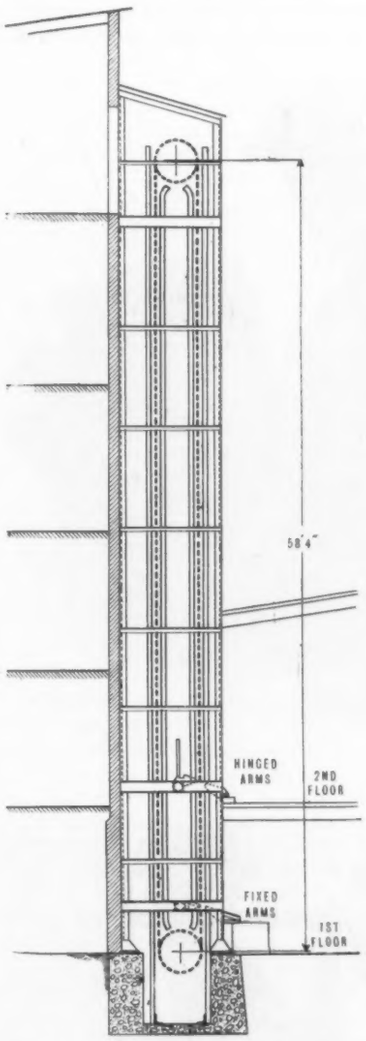


Fig. 3.—Side Elevation of the Elevator.

Because of lack of room in the main building the shipping department is housed in a two-story extension, so that it was found necessary to run the tray elevator up along the outside of the third, fourth and fifth floors, as shown by Fig. 3, and incase it in a steel tower extending through the roof of the lower building and anchored to the wall of the main building.

The exceptional grain situation this year has given Western farmers large amounts of money several weeks before such a condition has been possible in ordinary years. It is plain that Europe will continue to buy American wheat at good prices. From early September to the middle of November Russia shipped to the outside world 7,700,000 bushels less than in the same period of 1907, and 7,800,000 bushels less than in 1906. The supply of wheat in English granaries November 15 was 13,088,000 bushels less than in the middle of November, 1907, and 14,048,000 bushels less than in 1906.

The American Metal Numbering Machine.

Fig. 1 shows the model P metal numbering machine recently brought out by the American Numbering Machine Company, 291 Essex street, Brooklyn, N. Y., and Fig. 2 samples of work done with the machine. It is designed for stamping consecutive numbers on metal pieces such as machine parts, keys, locks, revolvers, metal tags, name plates, watches, jewelry or anything made of steel, brass, gold, copper, wood, leather, fiber or other hard materials. It is in effect a tool which may be applied to any power or lever press, the shank being made to fit the machine in which it is to be used. The speed at which parts may be numbered is limited only to the capacity of the operator. All possibility of mistakes, it is claimed, is eliminated, as the figures are advanced automatically. The impressions are declared to be always neat, legible and uniform. It has been demonstrated that with the device used in a press a boy can number more parts than three men with the old style die and hammer and that better work will be done.

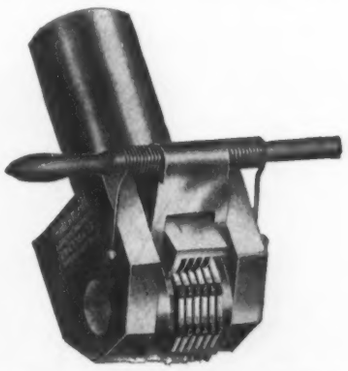


Fig. 1.—The Model P Metal Numbering Machine Made by the American Numbering Machine Company, Brooklyn, N. Y.

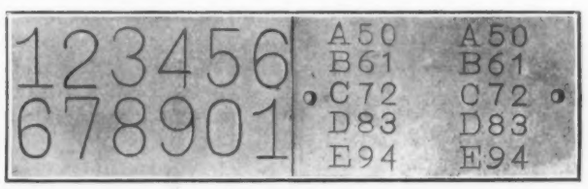


Fig. 2.—Samples of Work Done with American Metal Numbering Machines.

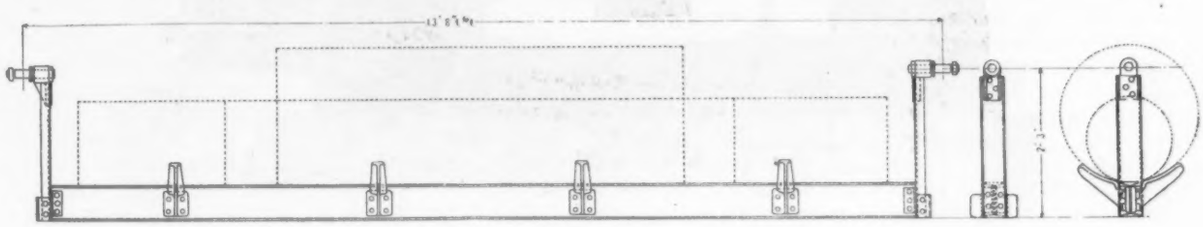


Fig. 4.—Detail of One of the Roll Trays.

The machine is operated automatically by adjusting the cross bar on the front of it to contact with some stationary part of the press, so that as the head carrying it rises to the top of its stroke the necessary movement is obtained to revolve the numbered wheels. Any style or size of figures can be furnished, but for most purposes sharp Gothic figures are found preferable. Figures may also be engraved on a radius or curve for stamping such parts as the barrel of a rifle or the back of a watch case.

The New Sturtevant Ring-Roll Mill.

The vertical ring and roller type of grinding mill, designed especially for crushing cement, fertilizers and similar substances, is coming into more common use since it has been perfected. It takes rock direct from the breaker in 1½-in. or smaller sizes, and no matter how hard will pulverize it to the required fineness. It is not a direct finishing machine; the material as it is discharged passes to an elevator and over a screen, which takes out the fines, the over size passing back to the mill for regrinding. The necessity of returning material through the mill formerly created prejudice against the type, but later realization of its large and steady output of fines for the power required has made it more popular.

The machine shown, built by the Sturtevant Mill Company, Boston, Mass., is an excellent example of the type. It consists primarily of a massive ring, R, Fig. 1, which is fastened to a head and rotates in a vertical plane, and three interior rolls, A, B and C. The ring in this size machine is driven at 75 rev. per min.; the rolls are revolved by friction. The broad inner face of the ring is concave axially, while the rolls are convex. The rolls are pressed by springs against the concave surface and are adjusted to crush at 20,000 lb., more or less, as found most effective for the work to be done. The rock, fed by an automatic feeder, passes to the center of the track of the ring through the chute S. The ring acts as the anvil and the rolls somewhat like hammers. The material is held on the ring by centrifugal force; the rolls revolve from contact with it and not with the ring itself. The first roll passes over and crushes the coarsest material as it is delivered from the chute, and it passes on to the other rolls. The feed is adjusted to always cover the ring with an inch of material. The ring necessarily runs true with its head, H, and shaft, without wobble to disturb the material, and this with the width of the track tends toward large production, for the capacity is largely proportional to the width of the ring. The finer material is constantly dropping from both sides of

Fig. 1.—The New Sturtevant Ring-Roll Mill, with Door Open.

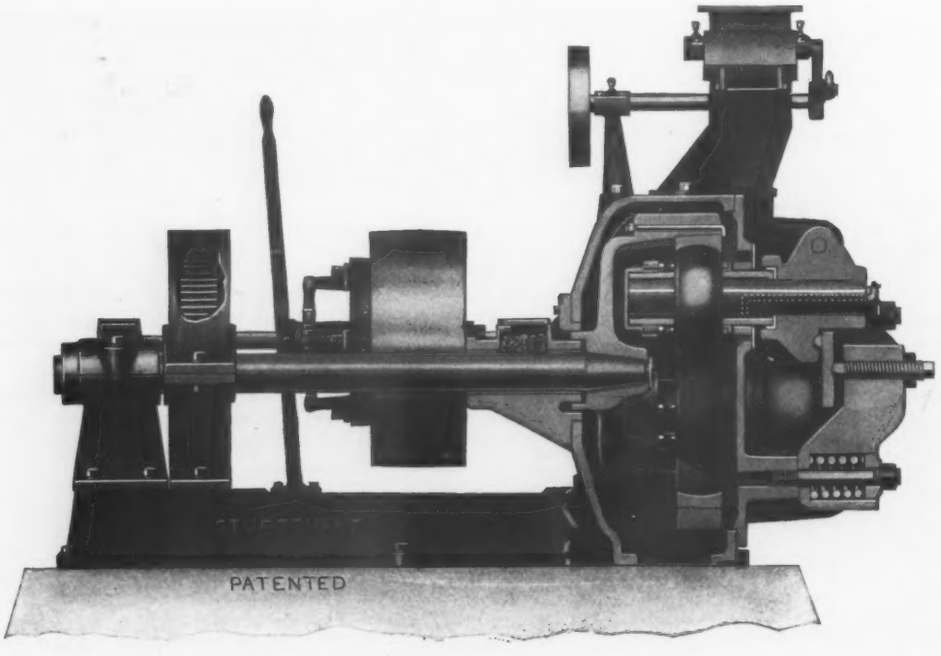


Fig. 2.—Sectional View of the Mill, Showing Details of the Mechanism.

the ring and escapes to the bottom of the case, from which it is conveyed to a screen, the company recommending for the purpose the Newaygo screen, which was described in detail in *The Iron Age* October 10, 1907. As the rolls are elastically pressed they pass over iron or other uncrushable substance, with shocks so cushioned that breakage or crystallization is avoided.

The novel feature of this new machine is the heavy swinging door which carries all of the grinding mechanism and its adjustments with the exception of the ring itself. The door swings like that of a safe. Opening the door brings the rolls outside of the mill, exposing the entire interior and making it easy to reach the ring for examination or replacement. The door closed brings the rolls into position for grinding, though not in contact with the ring until adjustment has been made through the medium of one screw on the outside of the door. Details of the door and its contained mechanism are seen in Fig. 2. The rolls are supported in strong bearings and are given the desired pressure by a spring actuated bell lever. Each roll carrier is pivoted; all the carriers are reached by a single pressure disk. One screw is attached to the door by heavy springs. When this screw is turned against the pressure disk the three rolls are forced equally toward the anvil ring, and as the screw is held in a spring supported spider the pressure is limited to the combined power of the springs, which power it is easy to increase or reduce to a point where the rolls do not bear upon the ring surface. The latter feature is desirable because otherwise rolls and ring would meet without intervening material and tend to injure one another.

The drive of the machine is from the single clutch pulley P, Fig. 1, and through intermediate gears *g* G to the shaft carrying the head; the ratio in this size machine is 4 to 1. The gears are incased and run in oil.

The capacity of this mill—the No. 1 size—is from 1 to 8 tons an hour, with a drive of from 8 to 20 hp. In a recent test, it is stated, one of these mills grinding Portland cement clinker required 1 hp. running empty and 8½ hp. operating at full capacity. Advantages claimed by the builder are that the ring and rolls are easily and quickly replacable; that the mill is noiseless and dustless; that no shields are necessary for steadying the ring; that the rolls have few bearing parts, and that there is a minimum amount of coarse tailings.

In the No. 1 machine the ring is 33 x 6 in.; the rolls 14 x 5 in.; friction clutch pulley, 30 x 8 in., running at 300 rev. per min.; width of machine, 4 ft. 8 in. with door closed, and 6 ft. 10 in. with door open; length, 9 ft. 6 in., door closed, and 11 ft. 2 in., door opened; hight, 5 ft. 10 in.; net weight, 12,000 lb. In the No. 2 machine the ring is 44 x 12 in.; rolls, 18 x 10 in.; diameter of friction clutch pulley, 36 x 16 in., running at 225 rev. per min; ring speed, 56 rev. per min; horsepower, 20 to 40; width, 6 ft with door closed, 9 ft. door opened; length, 12 ft. 3 in., door closed, 15 ft. 3 in., door open; hight, 7 ft. 6 in.; net weight, 22,000 lb.

Final argument in an infringement suit brought five years ago by the Bethlehem Steel Company against the Niles-Bement-Pond Company was heard December 9 before United States Circuit Court Judge Cross in Newark, N. J. This suit is over the Taylor-White process for hardening tool steel, invented by Frederick W. Taylor and Maunsel White, mechanical engineers, at the time in the employ of the Bethlehem Company, and to which they assigned the patents. It is the contention of the Bethlehem Company that the Taylor-White patent is being infringed upon by the defendants, and royalties for its use are asked for. The defendant company contends that the process has been used by steel makers all over the world for full 20 years and that it is therefore not patentable.

The Dominion Iron & Steel Company, Sydney, Nova Scotia, is reported to have produced 21,000 tons of pig iron and 24,000 tons of steel ingots in November. The shipments of finished product for the month were over 20,000 tons, as compared with 18,000 tons in October.

Better Light and Air for Miners.

BY A. CRESSY MORRISON, CHICAGO.

For several years acetylene has been used in miners' lamps in France, Germany and Belgium to a large and steadily increasing extent, until at present it is used almost exclusively in over 200 mines and by approximately 50,000 men. The light is satisfactory and saves nearly 50 per cent. of the cost, giving more and better light. Mining engineers have been more or less familiar with this fact, but the introduction of acetylene into mines up to the last two years has been very slow in this country. Its use is now, however, coming to be recognized as an important advance, and it promises shortly to replace all other means of mine illumination, except in special cases. It is seldom that an improvement in quality or advantage is accompanied by reduction in cost, but the paradox is a reality in the case of acetylene.

Candles, which are largely used throughout our Western mines, remove seven times and kerosene five times as much oxygen as acetylene. The products of combustion given off by candles are 10 times and from kerosene 9 times as much as that given off by acetylene. The difference is therefore enormous. The actual amount of illumination given by candles and kerosene is lessened by a very large percentage by the smoke and mist which so rapidly accumulate, whereas all the light given by acetylene reaches the point to be illuminated without any interference whatever.

It has been found in actual experience that in entries which are 60 to 70 ft. ahead of the air, there is not the slightest particle of smoke from an acetylene lamp and the entry is just as clear at the end of a shift as it is at the beginning.

An interesting thing about acetylene is the tenacity of the flame. It is not easily blown out, the rapid motion of the miner will not cause it to flicker badly, and it burns brilliantly in an atmosphere so foul that candles fade and go out. In fact, acetylene will not deprive the miner of light until the atmosphere is so bad it will not support life.

For underground surveying and mine inspection, the use of acetylene is of great importance. Maps and records escape the usual accompaniment of grease and smudge. The acetylene flame is so small and clear that it affords an accurate point on which to sight instruments.

Another use for acetylene in somewhat larger units is found where the rays are concentrated by a reflector, in which case a brilliant illumination can be thrown into inaccessible places where distant bays, high backs, caved places and other difficult and otherwise hidden parts of the mine can be explored with convenience and in case of emergency without danger.

In actual practice it has been found that 4 oz. of calcium carbide at 4 cents per pound will give nearly 10-candle power clear illumination without smoke for 5 hr. One-half pound, or 2 cents' worth, will give the same illumination for 10 hr. Candles in many parts of the country, counting four candles to the 10-hr. day, would cost 5 cents per day.

Acetylene miners' lamps are now frequently found in mines throughout the country, Pennsylvania, New Jersey and Illinois leading, though many other States are using the new light. The greatest number used by any one concern in its mines is probably by the New Jersey Zinc Company of New York, which has adopted acetylene illumination for all its mines. The number of miners' lamps in use in the mines of this company is about 3000, and it has been found in practical use that the saving is at least 2 cents per day for every miner. The whole method of using acetylene is so simple and the lamps now in practical use are so satisfactory that the subject of better illumination in mines is worthy of the attention of every mine owner and engineer.

The cotton crop of 1908 is estimated by the Department of Agriculture at 12,920,000 bales. These figures have only been exceeded twice—in 1904 and 1906.

The Phelps-Dodge Consolidation.

The copper and coal properties controlled by Phelps, Dodge & Co., New York, are to be consolidated with a capital stock of $50,000,000. A corporation is to be formed for this purpose to be named Phelps, Dodge & Co., Inc. A prospectus has been issued to the stockholders of the Copper Queen Consolidated Mining Company, Moctezuma Copper Company, Detroit Copper Mining Company of Arizona and Stag Canon Fuel Company, from which the following is taken:

In view of the rapid growth and greatly increased value of the different properties in which you are interested, as well as of the increased number of stockholders (caused principally by death during the past few years), we, the undersigned, representing a large majority of the stockholders in each of the different companies, have decided that it is for the best interest of all the stockholders to form a corporation, to be designated Phelps, Dodge & Co., Inc., by which the stock and properties of all your companies can be held, and the stock listed on the New York or Boston Stock Exchange, thus establishing a marketable value for the properties. It is proposed to form a corporation under the laws of New York with power to mine, smelt, refine and deal in metals, minerals and coal, to deal in lands and supplies, to hold and deal in the securities of other companies and with other appropriate corporate powers. It is desired to secure the stocks of your companies for the new company on the following terms:

The capital stock to be		$50,000,000
In shares of $100, which shall be used as follows: For purchase of—		
Copper Queen Consolidated Mining Company at $135 for each $10 share	$27,000,000	
Moctezuma Copper Company at $307 9/11 for each $10 share	8,000,000	
Detroit Copper Mining Company of Arizona at $150 for each $25 share	6,000,000	
Stag Canon Fuel Company at $800 for each $100 share	4,000,000	
To be held for future issue	5,000,000	
		$50,000,000

Any stock not subscribed for before January 1, 1909, on above terms will remain in the treasury. Application will be made to list the stock on the New York or Boston Stock Exchange. There will be nine directors.

The firm of Phelps, Dodge & Co. wil transfer its metal selling business and its good will to the corporation without charge, and go into liquidation, and Phelps, Dodge & Co., Inc., will sell the copper. The members of the firm will act on the directorate of the corporation. The company will buy or sell fractional shares at par to make shareholdings even.

The directorates of the companies in question are as follows:

Copper Queen Consolidated Mining Company: James Douglas, Cleveland H. Dodge, Arthur Curtiss James, James McLean, E. Hayward Ferry, George Notman, William Church Osborn.

Moctezuma Copper Company: James Douglas, Cleveland H. Dodge, Arthur Curtiss James, James McLean, George Notman.

Detroit Copper Mining Company of Arizona: James Douglas, Cleveland H. Dodge, Arthur Curtiss James, James McLean, E. Hayward Ferry, Fred A. Hunt, William Church Osborn.

Stag Canon Fuel Company: James Douglas, Cleveland H. Dodge, Arthur Curtiss James, James McLean, E. L. Carpenter, George Notman, William Church Osborn.

Phelps, Dodge & Co., Inc.: James Douglas, Cleveland H. Dodge, Arthur Curtiss James, James McLean, George B. Agnew, E. Hayward Ferry, Francis L. Hine, George Notman, William Church Osborn.

Messrs. James, Dodge, McLean and Douglas and their families hold a large majority of the stock of each of these companies.

It is open to every shareholder of each company to enter the new corporation on the same terms.

There will be no expense other than the usual expense of incorporation and listing. No commissions, compensation, profits or rights accrue to the undersigned or to any parties in interest except as they may profit by the transfer of their stock holdings on the basis herein set forth.

A statement by the comptroller of the various companies is appended, from which and from our general knowledge of the properties the relative values of the properties were arrived at. Since the date of these statements the usual receipts and expenses, including dividends, have occurred. Any stockholder may secure further information by applying to William F. Crane, comptroller, 99 John street, New York.

You are invited to sign the accompanying subscription, which will be binding when holders of 75 per cent. of the stock of each company have signed. The right to subscribe shall expire December 31, 1908, unless extended by resolution of the directors of the new company.

James Douglas, Cleveland H. Dodge, Arthur Curtiss James, James McLean, Wm. Church Osborn, E. Hayward Ferry, William D. Van Vleck, Cornelius R. Agnew, Walter P. Bliss, George Notman.

Copper Queen Consolidated Mining Company.

This property consists of 135 mining claims in the Warren Mining District, Cochise County, near the town of Bisbee, Ariz.; a large smelting plant at Douglas, of a capacity of 3000 tons a day, which treats the product of the mines of the Copper Queen Company, and for the time being the ores of the Moctezuma Copper Company, and does general custom work. The company conducts a mercantile business, and has large stores and warehouses in Bisbee and Douglas, and a branch store in Naco, Ariz., as well as other pieces of real estate. It also owns mining interests in other localities.

For five years past the production of the mines has been as follows:

	Pounds.		Pounds.
1903	37,257,470	1906	79,219,655
1904	50,151,552	1907	63,341,055
1905	64,625,955		
Total			294,595,687

The output of the Douglas Reduction Works, including purchased and custom ores, for five years past has been 363,121,911 lb.

The earnings of the company during the five years past have been as follows:

1903	$2,201,640.40	1906	$7,625,854.76
1904	2,960,659.70	1907	4,471,137.08
1905	5,609,486.30		
Total			$22,868,778.24

The difference between earnings and dividends is represented by expenditures on increased plant facilities and undistributed assets, consisting of the larger stock of coke and fuel necessitated by increased operations, and the accumulated stock of ores at the works, amounting in value to over $1,000,000, as well as by increased cash and increased reserves.

A large portion of the company's mining property has as yet been undeveloped, though situated within the recognized mineral zone of the district, and, owing to the difficulty of holding up the soft, shifting ground in which the ore occurs, it has always been found impossible to block out ore reserves as large as mines of such capacity elsewhere have usually maintained, as nominally in sight. There is, however, at the present time as much ore in sight as at any other period of the mine's history.

The valuation of the company's property as of November 1, 1908, exclusive of the mines, is as follows:

Invested in plant	$4,974,866.77
Other assets	10,915,492.97
Liabilities	1,275,573.40

Moctezuma Copper Company.

This property consists of about 2500 acres of mineral ground in the State of Sonora, Mexico, on which has been opened the Pilares Mine. This is in a mineralized body, oval in shape, and which retains approximately its dimensions between surface and the 700-ft. level. It is about 1700 ft. in diameter from north to south, and 1200 ft. in diameter from east to west, and contains a large area of profitable ore. A narrow gauge steam railroad 5 miles in length connects the mine through the Pilares Tunnel with the concentrating mill at the town of Nacozari. The tunnel itself with its branches is over a mile in length, and is large enough to allow of the railroad cars reaching through it the different sections of the mines, and receiving their charge from large bins

excavated out of the ore. These bins are of a capacity of several thousand tons each, and are fed through chutes extending to the surface levels, the chutes also being excavated from the mineralized ground.

The quantity of what may be considered ore depends entirely upon the grade which it is profitable at a given price for copper to work, but the mine is at present opened up for an extraction of 1500 to 2000 tons a day of ore of an average grade of 3 per cent. The daily capacity of the concentrating mill just completed at Nacozari is 2000 tons. At Nacozari is a well designed power plant, equipped with Curtis turbines of over 4000 hp., for transmitting high voltage current to both the mill and the mine. For the time being it is found to be more profitable to convey the concentrates and rich ores by the Nacozari Railroad to Douglas, Ariz., 70 miles distant, than to smelt them on the spot, the ores being treated at Douglas at the same profit to the Copper Queen Company as though they were custom ores supplied by an unallied customer. This feature of the company's operations explains the comparatively small quantity of supplies carried by the Moctezuma Copper Company, as compared with the other companies.

The old concentrating mill, which is still intact, with its very efficient gas engine and gas generating plant, which up to within a few months treated 600 tons of ore a day, is now out of commission, though it can be started at short notice as a supplemental plant to the new mill should this course be desirable.

The production for the five years past has been as follows:

	Pounds.		Pounds.
1903	10,281,970	1906	12,714,726
1904	11,061,649	1907	9,640,390
1905	10,160,016		
Total			53,858,751

The increased capacity of both the mine and the concentrating mill, owing to recent improvements, is indicated by the fact that in May, 1908, the production was 784,892 lb. of metallic copper, whereas by the month of October it had reached 2,300,000 lb. of copper, contained in 9500 tons of 12½ per cent. concentrates. A production of approximately 2,000,000 lb. of copper a month can now be maintained, and if the market demanded it this production could be increased to 3,000,000 lb. per month.

The net earnings for the five years past, while the mine was still in a stage of development and the works were contracted, were as follows:

1903	$456,524.55	1906	$1,195,424.18
1904	598,992.36	1907	833,236.25
1905	533,117.66		
Total			$3,617,295.00

The company has built and owns the whole town of Nacozari, and has provided it with a well furnished library and amusement hall, a thoroughly equipped hospital, hotel, boarding houses and schools. At the Pilares mine the company has provided its workmen with comfortable houses and supports a school. At both Nacozari and Pilares the company has large stores and warehouses, and conducts a profitable mercantile business.

The valuation of the company's property as of November 1, 1908, exclusive of the mines, is as follows:

Invested in plant	$3,046,384.32
Other assets	944,663.08
Liabilities	347,221.22

Detroit Copper Mining Company of Arizona.

The mines of this company are situated in the Clifton District, Ariz., in the same beds of felspathic rock which at the present time are yielding the product of the Arizona Copper Company, the Shannon Copper Company and certain less prominent organizations. The property owned by the company consists of 145 mining claims, and the ore now extracted amounts to about 36,000 tons per month, yielding about 3 per cent. of copper. The bulk of the ore is concentrated mechanically to a grade of about 15 per cent., and smelted at Morenci in the company's own smelting works.

The company's production for the five years past has been as follows:

	Pounds.		Pounds.
1903	16,869,300	1906	20,347,497
1904	16,424,394	1907	17,974,581
1905	14,632,117		
Total			86,247,889

The production for the 11 months of the present year has increased to 21,500,000 lb., owing in great measure to improved facilities for treatment. The future production with the present equipment can be maintained at approximately 2,000,000 lb. of copper per month.

The earnings during the past five years have been as follows:

1903	$543,456.00	1906	$973,456.42
1904	603,340.00	1907	814,874.11
1905	532,684.28		
Total			$3,467,810.81

The company runs a large store and hotel, and owns considerable other property in the town of Morenci, besides a powerful pumping plant on the San Francisco River 7 miles distant.

The valuation of the company's property as of November 1, 1908, exclusive of the mines, is as follows:

Invested in plant	$2,158,106.00
Other assets	2,934,465.97
Liabilities	149,878.48

The ores from the Copper Queen mines carry about twice the quantity of copper contained in those of the Nacozari and Morenci districts, but this advantage is offset by the higher cost of mining the Queen ore, owing to the character of the deposits in which they occur. Moreover, as the Queen ores cannot be subjected to preliminary mechanical concentration, which raises the smelting grade of the Nacozari and Morenci ores, they must be subjected to furnace treatment as they come from the mines; hence the cost of smelting a ton of Queen ore is higher than the cost calculated on a ton of crude Nacozari or Morenci ore, as it comes from the mine previous to mechanical concentration.

Stag Canon Fuel Company.

The Dawson coal fields are situated at Dawson, Colfax County, New Mexico, and were purchased in 1905 to secure for the copper mines of the Southwest a certain and steady supply of coal and coke. They were the property of the El Paso & Northeastern Company, and are represented by $1,000,000 stock and $1,000,000 bonds of the Dawson Fuel Company, which are pledged as collateral and additional security for two mortgages on portions of El Paso & Northeastern Company property aggregating $5,000,000. A sinking fund provision of 5 cents a ton begins in 1911.

The equity in the Dawson Fuel Company has been transferred to the Stag Canon Fuel Company, which owns 11,078 acres of coal lands adjacent. These combined properties consist, besides surface plants, of 38,718 acres, of which about 36,000 acres are underlaid by coal. The company likewise has the right to mine coal over 17,500 acres, of which, however, only 2500 are known to be underlaid by coal. All this property has been acquired from the owners of the Maxwell Grant, and is therefore held under unquestionable title.

There are several beds of coal on the property, but only one has been prospected and worked. From it 437 acres of coal have been worked out, leaving approximately 38,000 acres available for future extraction. Making the usual allowance for loss, more than 200,000,000 tons of coal should be extracted from this single bed.

The present mines opened are equipped for a total capacity of about 120,000 tons of coal a month. The output at the present time is about 90,000 tons per month. This is an increase over the output in January, 1908, when only about 65,000 tons were mined, and in February, when the output was only 41,688 tons.

Of the total coking plant of 550 ovens, 100 ovens are of the old-fashioned beehive type, and 450 are of underflue design, from all of which the waste gases can be recovered for the generation of power. The gases from only 200 of the ovens generate steam enough to run the washery, the pumping plant and the electrical underground transportation. The tipples and crushing plant, as well as the washery, are built of steel—every piece of machinery, even the jigs, being incombustible. As a precaution against explosions electrical firing is practiced in all the mines.

The capacity of the coke ovens is 27,000 tons a month. The present output is 25,000 tons. The quality of the coke is from actual tests equal in efficiency to within

7 per cent. of the best Eastern coke. The railroad connecting the coal mines with the copper mines has provided a supply of coke rack cars and of steel coal cars sufficient to handle the product, and therefore the shortage and irregular supply of fuel to the copper mines which have hampered smelting operations in the past will, it is hoped and believed, be avoided.

The operations of the company during the fiscal year ending June 30, 1908, which was a year of deep industrial depression, with only a part of the new ovens in operation, were as follows:

Tons of coal mined		846,473
Tons of coke made		177,043
Gross earnings		$1,518,809.69
Expenses:		
Account of coal	$813,371.42	
Account of coke	476,749.08	
		1,290,120.50
Net earnings		$228,689.19
Other earnings		55,253.42
Total net earnings		$283,942.61

The company has built for its miners comfortable houses, provided a hospital with an efficient staff of doctors and nurses, and a large amusement hall, with reading and billiard room. A general store is run by the Southwestern Mercantile Company, of which the stock is owned by the Stag Canon Fuel Company.

The actual cost of the permanent improvements on the property since the present owners came into possession has been $2,452,388, but the mines are now so well equipped, and the plants so nearly completed, that but little further expenditure on construction will have to be made in the near future.

The valuation of the company's property as of November 1, 1908, exclusive of the mines, is as follows:

Invested in plant		$3,226,488.42
Other assets		749,272.00
Liabilities:		
Eight notes dated April 18, 1908	$2,000,000.00	
One note dated April 18, 1908 (Payable on or before ten years from date of said notes.)	175,009.13	
Other accounts payable	213,483.83	
Total liabilities		$2,388,492.96

FINANCIAL SUMMARY AS OF NOVEMBER 1, 1908.

Invested in Plant and Other Assets.

Copper Queen Consolidated Mining Company	$15,890,359.74
Moctezuma Copper Company	3,991,047.40
The Detroit Copper Mining Company of Arizona	5,092,571.97
Stag Canon Fuel Company	3,975,760.42
Total	$28,949,739.53

Liabilities.

Copper Queen Consolidated Mining Company	$1,275,573.40
Moctezuma Copper Company	347,221.22
The Detroit Copper Mining Company of Arizona	149,878.48
Stag Canon Fuel Company	2,388,492.96
Total	$4,161,166.06

Customs Decisions.

Drawn Steel.

The board has sustained a claim filed by A. V. Berner, Boston, regarding the classification of rough shapes of drawn steel. It is held that the shapes are dutiable properly at the rate of 4 7-10 cents per pound under paragraph 135, plus additional duty under paragraph 141. The collector's assessment of 45 per cent. as "manufactures of metal" is set aside.

Nickel Alloy in Bars.

Lower duty has been accorded the Seymour Mfg. Company, New York, on importations of so-called hot rolled wire rods or bars, composed of an alloy of nickel and copper. Duty was assessed on the merchandise at the rate of 45 per cent., whereas the importers set up the contention that the rods should be allowed to enter at 6 cents a pound under the provision in the tariff act for nickel alloy in bars, nickel chief value. The question of its classification was brought before the Board of United States General Appraisers, and that tribunal, in a decision by General Appraiser Fischer, upholds the claim of the importing firm for the imposition of the lower rate of duty. The decision says:

> It is not disputed that the imported article is used solely as raw material for making wire by drawing through dies; that it is produced by hot rolling, and that the component material of chief value is nickel. It is thus clear that these wire rods are of the same kind as those passed on by the board in an abstract decision, and are properly dutiable, as claimed, as one of the forms of nickel alloy provided for in paragraph 185. The protest is sustained and the decision of the collector modified accordingly.

Steel Boiler Tubes.

In sustaining a claim filed by the importer, the American Shipbuilding Company, Cleveland, the Board of General Appraisers rules that steel boiler tubes are dutiable at the rate of 2 cents per pound under the provision in the tariff act for "lap welded steel tubes or flues." The customs authorities exacted a duty of 2½ cents per pound as "welded cylindrical furnaces made from plate metal." General Appraiser Fischer indicates in his decision that there has been a good deal of litigation over merchandise of this kind, and says in part: "We find that these articles are welded, corrugated or ribbed steel cylinders or tubes, and that they differ in no respect from the so-called arched Purves furnaces or Purves ribbed steel boiler flues, the subject of previous rulings of the courts and this board. These steel cylinders or tubes are intended to be made into furnaces after they are imported, to accomplish which requires not only the application of labor but also the addition of other and essential parts. In an unpublished decision of April 29, 1903, upon protests of F. B. Vandegrift & Co., the board, in passing upon merchandise of precisely the same kind as that now before us, found that such steel tubes or flues were not in fact cylindrical furnaces, nor known so commercially. The board there held that the said articles were properly dutiable as steel boiler tubes or flues as provided for under the first clause of paragraph 152. That ruling was affirmed by the United States Circuit Court and by the United States Circuit Court of Appeals."

Wire Rods and Strip Steel.

Steel wire rods imported by Hermann Boker & Co., New York, and assessed for duty at the appropriate rate for "steel bars," are held by the board to have been wrongly classified. Instead, the claim of the firm for lower duty under the provision in the tariff for "steel wire rods valued at over 4 cents per pound" is upheld. The board also sustained claims filed by the same firm relating to strip steel and cold rolled steel importations.

A protest filed with the board objecting to the imposition of an additional duty of 1 cent per pound on strip steel entered by the Athenia Steel & Wire Company was sustained.

Steel Floor Plates.

Acting in harmony with the rulings of the Federal courts, the Board of United States General Appraisers has handed down a decision in the case of R. D. Wood & Co., Philadelphia, in which it is held that steel floor plates made with one side checkered to prevent slipping are dutiable under paragraph 135 of the tariff as "steel plates not specially provided for."

It was the contention of the Government that the articles should be deemed "boiler or other plate steel or iron." The rate granted by the board to the importers is 1-6 of 1 cent per pound, whereas the Government's classification called for ¼ of 1 cent a pound. The plates in question measure 12 ft. by 59 in. and are 5-16 in. thick, and are specially adapted for use as flooring for boiler rooms. General Appraiser Fischer, who writes the decision for the board, says that the United States Circuit Court of Appeals has construed the tariff law in harmony with the finding of the board. He says:

> The provision in paragraph 126 for "boiler or other plate iron or steel," as thus construed, applies only to plate steel used in the construction of boilers, tanks or vessels, such as may be cut, bent and shaped. We consider the matter of the proper classification of these steel floor plates as judicially determined.
>
> The merchandise is properly dutiable under paragraph 135 of the tariff act. The claim in the protest is sustained and the decision of the collector modified accordingly.

The National Tube Company is dismantling the old tube mill in Oil City, Pa., which has not been operated for some years. The buildings are being demolished to avoid assessment for taxes. Most of the machinery is being sold for scrap.

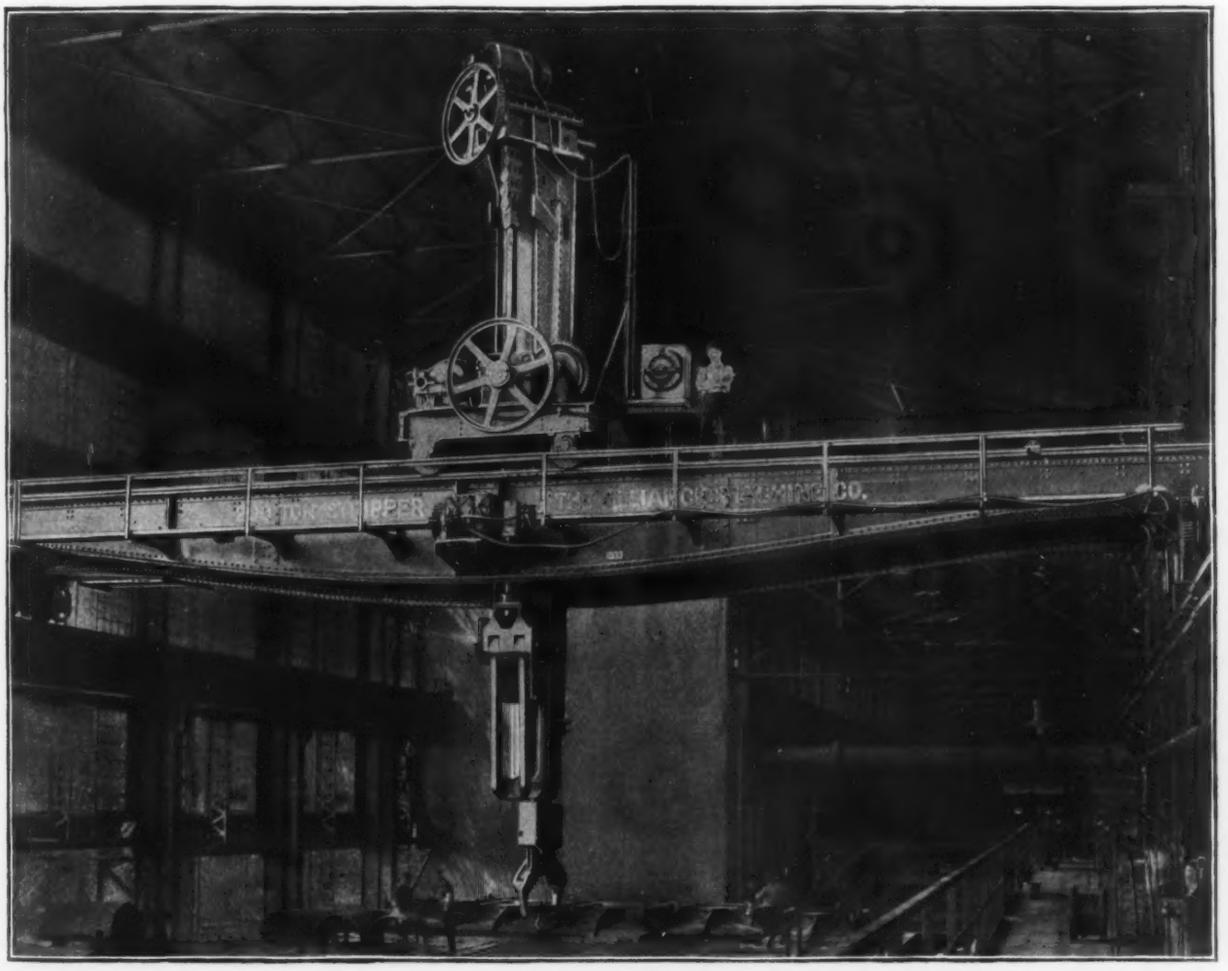
The Alliance Combined Stripping and Charging Crane.

The accompanying illustration shows one of two combined stripping and charging cranes manufactured by the Alliance Machine Company, Alliance, Ohio, for the new plant of the Pittsburgh Steel Company, Monessen, Pa., under the patent of J. C. Cromwell and H. W. Lash of the Garrett-Cromwell Engineering Company. As is indicated by the name, the machine serves the double purpose of stripping the molds from the ingots and charging the ingots into the soaking pits, or reheating furnaces. After the ingots have been heated the same crane withdraws them from the soaking pits and delivers them upon ingot buggies or chariots, or else places them directly on the roller table of the blooming mill.

In most steel plants heretofore it has been the rule to provide distinct pieces of apparatus for the stripping and charging, requiring two crews of attendants, and in many plants the stripper is in a separate building. Using two separate machines is more expensive, often compels undesirable arrangement in the installation, and, what is still more objectionable, wastes time between the stripping of the mold from the ingot and the placing of the ingot in the soaking pit, due to the necessary shifting and switching of the ingot carrying cars. The stripped ingots thereby lose considerable heat, which is obviously a disadvantage.

The combined crane consists of a standard traveling crane bridge provided with a special trolley carrying two independent and vertically movable columns. All the necessary mechanism for stripping the ingots is carried on one of these columns, and the mechanism for gripping the ingot and charging it into the soaking pit is carried on the other column. Each of these columns is operated by an independent motor, and each is ready at any instant to perform its particular function. By this arrangement, when the stripping column has stripped the ingot, the charging column can at once take the ingot and charge it into the soaking pit. The stripping column can exert a stripping pressure of 200 tons, and the charging column can readily handle ingots weighing 7½ tons, although the ingots in use weigh only 3½ tons.

While the cranes referred to have been in operation but a comparatively short time, it is reported that they have already stripped, charged, drawn and delivered 1100 tons of ingots in one turn.



One of the Two Alliance Combined Ingot Stripping and Charging Cranes in the Pittsburgh Steel Company's Monessen Plant.

In a recent bulletin of the Bureau of Labor at Washington, Dr. Victor S. Clark deals with the increasing dependence on Mexican labor of industries in the Southwestern States. Between 60,000 and 100,000 Mexican immigrants are added each year, finding work on railroads and in the mines and cotton fields. The Mexican is not strong, but is docile and works for a low wage. He competes with Italian, Greek and Japanese rather than American labor. Meantime the labor in Mexico is not adequate to the expansion of industries there and wages are rising. Planters and mining and railroad companies have therefore been importing thousands of Chinese and Japanese. Some of the Mexican immigrants return to Mexico, carrying the higher standard of living learned in the United States, but many remain, to be assimilated by the Spanish-speaking population of the Southwest.

Commodity prices are still advancing. *Bradstreet's* approximate index number as of December 1, 1908, was $8.2396, a gain of 2 per cent. over November 1 and of 6.6 per cent. over June 1, 1908, which marked the lowest point of the decline in commodity values this year. From the high point of commodity prices reached March 1, 1907—$9.1293—to the low point June 1, 1908—$7.7227—the decline was 15 per cent., so that the rise in the past six months has made up less than half the decline in the previous 15 months.

Stable Steel Prices Defended by Judge Gary.

Informal conferences of representative steel manufacturers in New York December 10 were followed in the evening by a dinner at the Waldorf-Astoria, at which 150 of the country's leading iron and steel men were present. The dinner was given by Judge Elbert H. Gary, chairman of the United States Steel Corporation, who delivered an address in which he defended the recent policy regarding prices, and eulogized modern methods of international and national co-operation to conserve trade interest. He also spoke in favor of harmony among the various manufacturers. His remarks on this point were punctuated at intervals with much applause. Speeches more or less informal were also made by several of the guests. In the course of Judge Gary's address he said:

Judge Gary's Address.

Time, never ending and never stopping, marks a full year since we first met to consider a proper method of contributing our thought and influence to aid in the effort to prevent disaster to the business interests of this country.

The conditions which existed and the dangers which confronted us one year ago are too well known to make it necessary to attempt to describe them. Nor would it be useful at this time to refer in detail to the causes which precipitated the panic. It was the culmination of disturbances which had been accumulating for a considerable period. It seems now to be the common belief that the action and disposition of the manufacturers of iron and steel during the last year have been of material benefit to the manufacturers themselves, to their customers, to their employees and to the general public. Possibly the influence of your action has extended in some measure to other countries. As you know, the Iron and Steel Institute of Great Britain honored me with a dinner and reception during the early part of last September. It would be false modesty in me if I failed to recognize and acknowledge this as a great personal compliment which any one might be proud to receive, and yet it is accurate to say it was intended by our foreign brethren to evidence their feelings of respect and admiration for the great movement of conciliation and co-operation which you have successfully upheld during the last 12 or 13 months.

RESULTS OF EFFORTS TO CO-OPERATE.

At the London dinner there was a representative gathering, which included a large number of the most important iron masters of Great Britain and the Continent. During the evening expressions were freely given favorable to our movement and of its beneficial effects upon the iron and steel industry abroad and upon business conditions generally. We are under obligations to foreign manufacturers for their feelings of friendship and confidence and should in every proper way give proof of our desire to reciprocate.

What is this movement, and up to date what have been its results? The movement has been simply an effort on the part of those interested in the iron and steel industry to establish a basis of friendly association and intercourse which is calculated to enable each to obtain full knowledge concerning the affairs of all the others and the beneficial results which naturally follow such knowledge. In other words, to expose, for the benefit of all, the individual action of each so that every one having a disposition to act reasonably and fairly toward his neighbors may determine his course with full information of all the facts.

THE CO-OPERATIVE MOVEMENT MISUNDERSTOOD.

That some, and perhaps many, of the leading thinkers and writers have misunderstood our action is probable. Some at least have questioned the propriety, if not the legality, of our efforts; and apparently others have believed these efforts would be of no substantial benefit. I think I represent the views of all present in saying we have never doubted the propriety or legality of our action because we knew our motives were good. We have never intended to antagonize the laws of the country or the rights and interests of any one. We have occasionally read published criticisms of our movement on the ground that there was a combination or an agreement in restraint of trade; an agreement, express or implied, to maintain prices, to restrict output, or to divide territory. But the fault lies in the unjustified assumption of fact.

As I understand, it is not improper for competitors to meet and without reserve furnish full information and express opinions concerning the business affairs of all, provided they are not acting under an agreement, express or implied. It is not wrong even though any or all may be influenced regarding any particular business, nor even though the result may be to prevent radical and unreasonable changes in prices. It is common practice the world over for men engaged in all the different lines to frequently meet their associates and competitors and to freely discuss conditions and interchange views respecting the proper and reasonable conduct of all concerned. It is not necessary to go into details. The suggestion covers farmers, mechanics, bankers, laborers, merchants, transportation companies, professional people and all others. It includes prices, rates, quantities, amounts, production, sales, wages, fees, etc. In connection with the movement under consideration we have had no agreement in restraint of trade, express or implied. We have never intended nor resorted to any evasion, and the public has been accurately informed concerning our action. Therefore, we may dismiss this subject with the statement that if we shall be convinced we are wrong in our conclusions, or that we have antagonized public interests, or if complaint is made by any one authorized to make it, we will discontinue our efforts to co-operate whatever injury may ensue.

NEVER INTENDED TO ANTAGONIZE LAWS OF COUNTRY.

As to the results of our efforts to co-operate there is, I think, no reasonable doubt they have been of great benefit. The prices of the different manufacturers have not been uniform, and the prices of each have fluctuated more or less from time to time. Some manufacturers have not been as considerate of the interests of others as they ought to have been. Perhaps all of us have been influenced by motives of selfishness. But I do not hesitate to say our movement has prevented wide and sudden fluctuations, destructive competition, disaster and failure to manufacturers and their customers, reduction of wages and idleness on the part of employees, all of which, except for our efforts, would have been certain.

We have been successful in securing stability as opposed to demoralization. This has tended to promote the best interests of ourselves and all others. Whether or not this movement for conciliation and co-operation, as opposed to the unreasonable and destructive competition of the past, shall continue to be successful I cannot say. As a very learned and eminent gentleman said to me within the last few days: "It is well worth trying." I have great faith in the future. The world is growing better. Soon it is to be hoped we shall, even in business matters, substitute the principle that "right makes might" for the old sentiment that "might makes right." We ought to be working together and for one another. Each should consider the rights and interests of all others. Let us be a little more generous toward each other. We have established a business friendship which should be permanent and valuable.

Those in Attendance at the Dinner.

Among those who attended the dinner were:

Morris Backman, president Sharon Steel Hoop Company, Sharon, Pa.
Edward Bailey, president Central Iron & Steel Company, Harrisburg, Pa.
George Bartol, general manager Otis Steel Company, Cleveland, Ohio.
J. G. Battelle, president Columbus Iron & Steel Company, Columbus, Ohio.
Frank J. Billings, Cleveland, Ohio.
L. E. Block, vice-president Inland Steel Company, Chicago.
C. W. Bray, president American Sheet & Tin Plate Company, Pittsburgh, Pa.
W. L. Brown, president American Shipbuilding Company, Chicago.
E. J. Buffington, president Illinois Steel Company, Chicago.
John A. Burden, president Burden Iron & Steel Company, Troy, N. Y.
J. G. Butler, Jr., Bessemer Ore Association, Youngstown, Ohio.
J. A. Campbell, president Youngstown Sheet & Tube Company, Youngstown, Ohio.
H. S. Chamberlain, president Roane Iron Company, Chattanooga, Tenn.
E. A. S. Clarke, president Lackawanna Steel Company, New York.
E. S. Cook, president Warwick Iron & Steel Company, Pottstown, Pa.
Daniel Coolidge, president Lorain Steel Company, Lorain, Ohio.
W. E. Corey, president United States Steel Corporation, New York.
William T. Crance, president Northern Iron Company, Philadelphia.
H. Coulby, president Pittsburgh Steamship Company, Cleveland, Ohio.
H. G. Dalton of Pickands, Mather & Co., Cleveland, Ohio.
W. B. Dickson, second vice-president United States Steel Corporation, New York.
A. C. Dinkey, president Carnegie Steel Company, Pittsburgh.
Peter Donaldson, president Dayton Coal & Iron Company, Dayton.
T. J. Drummond, vice-president Lake Superior Corporation, Montreal, Canada.
B. F. Fackenthal, Jr., president Thomas Iron Company, Easton, Pa.
L. W. Francis of Witherbee, Sherman & Co., New York.
E. H. Gary, chairman United States Steel Corporation, New York.
Edward M. Hagar, president Universal Portland Cement Company, Chicago

H. L. Haldeman, vice-president Pulaski Iron Company, Philadelphia.
J. A. Hatfield, president American Bridge Company of New York.
August Heckscher, vice-president Eastern Steel Company, New York.
Austin Heckscher, president R. Heckscher Sons & Co., Philadelphia.
Rev. John Wesley Hill, New York.
Joseph H. Hoadley, president Alabama Consolidated Coal & Iron Company, New York.
James H. Hoyt, Cleveland, Ohio.
C. R. Hubbard, president Wheeling Iron & Steel Company, Wheeling, W. Va.
A. F. Huston, president Lukens Iron & Steel Company, Coatesville, Pa.
O. W. Hutchinson, president Grand Crossing Tack Company, Grand Crossing, Ill.
Antole Issaeff.
Archibald Johnston, vice-president Bethlehem Steel Company, South Bethlehem, Pa.
J. R. Jones, secretary Alan Wood Iron & Steel Company, Philadelphia.
Charles Kirchhoff, editor *The Iron Age*, New York.
James Lord, president American Iron & Steel Mfg. Company, Lebanon, Pa.
C. H. McCullough, vice-president Lackawanna Steel Company, Buffalo, N. Y.
G. G. McMurtry, chairman American Sheet & Tin Plate Company, Pittsburgh.
Charles MacVeagh, general solicitor United States Steel Corporation, New York.
W. G. Mather, president Cleveland-Cliffs Iron Company, Cleveland.
His Excellency Jean de Nazimoff.
Benj. Nicoll, New York.
Edwin N. Ohl, president United Iron & Steel Company, Pittsburgh.
W. P. Palmer, president American Steel & Wire Company, Cleveland.
Leonard Peckitt, president Empire Steel & Iron Company, Catasauqua, Pa.
John A. Penton, managing editor *Iron Trade Review*, Cleveland.
George W. Perkins of J. P. Morgan & Co., New York.
H. F. Perkins, manager steel department International Harvester Company, Chicago.
W. G. Pollock, Cleveland.
James H. Reed, Pittsburgh.
David Reeves, president Phœnix Iron Company, Philadelphia.
John Reis, assistant to president United States Steel Corporation, New York.
J. W. Reynders, vice-president Pennsylvania Steel Company, Steelton, Pa.
F. B. Richards of M. A. Hanna & Co., Cleveland, Ohio.
Ferd W. Roebling, treasurer John A. Roebling's Sons Company, Trenton, N. J.
W. A. Rogers, president Buffalo & Susquehanna Steel Company, Buffalo, N. Y.
Wallace H. Rowe, president Pittsburgh Steel Company, Pittsburgh.
W. B. Schiller, president National Tube Company, Pittsburgh.
C. M. Schwab, president Bethlehem Steel Company, South Bethlehem, Pa.
I. M. Scott, president La Belle Iron Works, Steubenville, Ohio.
C. B. Shoemaker, president Glasgow Iron Company, Pottstown, Pa.
Z. G. Simmons, president Simmons Mfg. Company, Kenosha, Wis.
Powell Stackhouse, president Cambria Steel Company, Philadelphia.
Francis L. Stetson, general counsel United States Steel Corporation, New York.
Moses Taylor, vice-president Lackawanna Steel Company, New York.
Alexis Thompson, president Inland Steel Company, Chicago.
Richard Trimble, treasurer United States Steel Corporation, New York.
W. R. Walker, assistant to president United States Steel Corporation, New York.
George W. Wickerham, New York.
Frank S. Witherbee of Witherbee, Sherman & Co., New York.
F. W. Wood, president Maryland Steel Company, Sparrows Point, Md.
Howard Wood, president Alan Wood Iron & Steel Company, Philadelphia.
Edward Worcester, vice-president National Tube Company, Pittsburgh.
W. P. Worth, treasurer Worth Bros. Company, Coatesville, Pa.
August Ziesing, president American Bridge Company, Pittsburgh.

In a paper before the British Foundrymen's Association, Percy Longmuir referred to the special steel products now being produced in the foundry—those for certain types of shell and for switches and crossings—and predicted that cast armor would compete to a considerable extent with forged armor. The Hadfield Steel Foundry is now furnishing some portions of battleship armor made by its casting process.

Industrial Accidents.

In Bulletin No. 78 of the Bureau of Labor, Department of Commerce and Labor, Frederic L. Hoffman presents statistics showing the high accident liability of workmen in the United States. The number of lives lost in a year by accidents to employees while at work is between 30,000 and 35,000. Census reports covering the years 1900 to 1906 show that out of over 1,000,000 deaths of males, more than 9 per cent. were due to accident. A large proportion of these deaths are due to causes related to the occupations of the injured persons. The present discussion takes up these accidents in five groups, viz., factories and workshops, electrical industries, mines and quarries, transportation by rail and transportation by water.

Of those employed in factories and workshops probably the most exposed class are the workers in iron and steel. Reports of 8456 accidents to this class of workmen for the years 1901 to 1905 show that 4.1 per cent. of the accidents to men employed in rolling mills resulted fatally. Among nut and bolt workers in Pennsylvania the returns of the chief factory inspector show the fatal accident rate during 10 years to have been 5.4 per 1000, and in miscellaneous steel and iron work 4.3 per 1000. According to the industrial insurance experience the fatal accident rate of electricians and of electric linemen is excessive. Of 645 deaths of electricians 14.7 per cent. and of 240 deaths of linemen 46.7 per cent. were due to accidents.

Granting that many accidents in the United States are due to ignorance or carelessness and that conditions are in many respects different from those in Europe, the writer considers that life is wasted in this country, and health and strength impaired, that is of vast economic significance.

If, for illustration, the accident liability of employees in coal mines in the United States were reduced from 3.10 per 1000, which was the average annual rate for the period 1897-1906, to 1.29 per 1000, the average rate in the United Kingdom for the same period, the annual saving in human life would be 915. If the rate of casualties of railroad employees in this country were reduced from 2.50 per 1000, which was the average annual rate for 1897-1906, to 0.98 per 1000, the average for the German Empire for the same period, the annual saving would be 1735 lives.

Of the more than 30,000 wage earners killed by accidents in the course of a year it should not be impossible to save at least one-third and perhaps one-half by intelligent and rational methods of factory inspection, legislation and control. In addition there were approximately not much less than 2,000,000 nonfatal accidents, that not only involve a vast amount of human suffering and sorrow, but materially curtail the normal longevity among those exposed to the often needless risk of industrial casualties.

The Associated Foundry Foremen of Philadelphia and Vicinity.—The regular monthly meeting was held in the new meeting place, Odd Fellows' Temple, Philadelphia, on the evening of December 8. The meeting, which was very largely attended by both local and out of town foundry foremen, was called to order by President W. A. Perrine, and after the reading of the minutes of the previous meeting routine business was transacted. The subject for discussion was a paper on "Cupola Practice," presented by Dr. Richard Moldenke, Watchung, N. J., secretary of the American Foundrymen's Association. Considerable discussion followed the reading of this paper, after which a rising vote of thanks was tendered the author for his interesting and instructive presentation.

The Harbison-Walker Refractories Company, Pittsburgh, has contracted to supply 2,000,000 brick for No. 4 furnace of the Illinois Steel Company at Joliet, Ill. The Badger Malleable Iron Company, Milwaukee, has also purchased its supply from the same company.

The Van Dorn Electric Mfg. Company, Cleveland, Ohio, has opened an office at 239 Fourth avenue, Pittsburgh, with James A. Bradley in charge. It manufactures generators, motors, electric drills and a complete line of electric appliances.

The Cincinnati Metal Trades Association.

What is regarded in many ways as the best meeting in the history of the Cincinnati branch of the National Metal Trades Association was held at the Business Men's Club, Cincinnati, on the evening of December 10. The function was a combined quarterly dinner and business meeting. The guest list, beginning with their fellow citizen and Governor-elect of Ohio, Judson Harmon, included H. W. Hoyt, vice-president, Great Lakes Engineering Works of Detroit and member of the Administrative Council of the national organization; Prof. Edward Robinson, head of the Mechanical Engineering Department of the University of Vermont; John F. Hem, secretary St. Louis branch of the National Metal Trades Association; Frederick C. Hicks, professor of economics and dean of the College of Commerce and Finance of the University of Cincinnati; A. V. Persson, Solvay Process Company, Syracuse, N. Y.; J. L. Shearer, superintendent Ohio Mechanics' Institute, and Profs. Fred E. Ayer of the Civil Engineering Department, and Herman Schneider, founder of the co-operative system of industrial education, both of the University of Cincinnati. W. A. Layman, Wagner Electric Company, St. Louis, was unavoidably absent and his place on the speakers' list was taken by another of the guests.

Nearly the entire membership was out, and the menu designed and ordered by the efficient Committee on Entertainment, headed by E. Von Wyck of the Von Wyck Machine Tool Company, accorded well with the popular conception of a "prosperity dinner." President John W. Neil was an ideal toastmaster.

The business of the meeting was concluded rapidly, covering reports on the industrial education plan; on the proposed new constitution for the national body, in which the local organization recommends that the members vote in favor of these as submitted, and the appointment of a special committee from the Cincinnati association to assist in the securing for Cincinnati a nonpartisan Milk Inspection Board. Mr. Hargrave's motion was enthusiastically indorsed and President Neil named E. H. Hargrave, J. C. Hobart and August Tuechter as the association's committee.

The Addresses.

Governor-elect Harmon was introduced quite cleverly in a short dissertation on the merits of some late "home grown" products in the Presidential and Governor class. He spoke of the new forms of bank inspection, noted that last winter the State Legislature abolished the contract system in the penal institutions, discussed the possible effects on the State industrial situation therefrom, and commended the existing work in the interest of river and harbor improvements. Professor Hicks outlined interestingly the various departments of work in his institution and their close connection with the machinery manufacturing industries. He lauded the work of his fellow instructor, Professor Schneider, the founder of the co-operative education plan. Mr. Hoyt was pleasantly likened in Toastmaster Neil's introduction to "an industrial Santa Claus from the frozen north." Mr. Hoyt's first care was to thank the Cincinnati branch for its cordial demonstration in favor of the new constitution and by-laws of the national body, and noted the tremendous influence wielded in the parent association through the numerical strength and individual importance of membership of the Cincinnati organization. In the nature of a forecast, Mr. Hoyt said: "The future of the National Metal Trades Association is infinitely more promising in its certainty of beneficent effects than in the past. It is now but toddling through its infancy. The association will settle as the greatest possible agent of peace and prosperity." He declared that the Metal Trades membership will surely achieve the freedom of the American workman from the closed shop. "When the open shop is thoroughly established, as it surely will be, you can turn your tremendous power to other forms of improvement of the American workmen," said the speaker, impressively.

Studying the Co-operative Education System.

In the absence of Mr. Layman of the Wagner Electric Company, President Neil introduced A. V. Persson of the Solvay Company, referring to him as the exponent of the industrial development of the youth "and other by-products." Mr. Persson explained that he was in Cincinnati expressly to study the workings of the co-operative education system, with a view to applying it in the immense Solvay schools in Syracuse, where children and employees numbering 8000 are to form material for the inauguration of the plan. Professor Robinson of the University of Vermont frankly admitted that he came to Cincinnati to investigate what, said he, "seems to me to be a great educational movement." He noted the sharp contrast between his first and last impressions of the city, and in closing said: "And now I think in the engineering profession we've got to come to the smoky city of Cincinnati to get that light we are all groping for."

Prof. J. L. Shearer of the Ohio Mechanics' Institute, the school that has been so handsomely remembered by Cincinnati's wealthy woman, Mrs. Thomas Emery, in the donation of $500,000, spoke next, and outlined the work of that institution, and said: "It was your generosity, gentlemen, that started us; one gave a lathe, another a planer, another a milling machine, and so on." He reminded the members of their promise to name a committee to equip the new institution when ready, noted that the machine shop would be 40 x 230 ft. in size, and asked that it be fitted up in a manner to do honor to the Cincinnati tool producing community. Of special interest was Mr. Shearer's statement that the new building would have a large part of its floor space to devote to the display of tools in operation, showing the Cincinnati line of manufacture, which would not be conducted as a source of revenue so much as a matter of pride in the community. Professor Schneider said that he had been entertaining during the day Director Hamerschlag of the Carnegie Technical Schools, Pittsburgh, who had come to learn about the co-operative educational scheme and noted that correspondence is heavy from all parts of the country asking about the plan. He called attention to the meeting of the Schoolmasters' Club, announced for December 12, when the topics for discussion would be "Schools, the Shop and the Store," and many manufacturers interested in the co-operative education scheme would attend and talk.

Secretary Manley's Address.

Prof. J. L. Shearer of the Ohio Mechanics' Institute, lowed with a forceful address on association work and the new system of university-shop education, in part as follows:

It is admitted not alone in this city, but throughout the entire country, that the industries of this city have entered upon a new era of effort because they recognize the fact that, if the manufacturers of this country are to retain the position they now occupy in the commercial world, it is necessary that prompt and intelligent action be taken to the end that the intelligence and efficiency of the workman may be increased. This will be brought about in a large measure through the co-operative course in engineering, which has been established jointly by the University of Cincinnati and the industries of the city. The great mass of correspondence had by this association with manufacturers and educators in other cities attests the interest of all progressive Americans in this important subject.

A co-operative course patterned after the Cincinnati plan has been adopted in Chicago, St. Louis, Worcester and Fitchburg, Mass., and it is gratifying to note the number and prominence of visitors who come to Cincinnati to study the Cincinnati plan. The extension of this course to the high schools (to which it is equally adaptable, if it is within the power of the Board of Education to do so) would result in bringing this thoroughly practical training within the reach of a great number of young men who crave for it and increase the attendance as well as the efficiency of the High School, thus enabling it better to equip its students to meet the demands of society.

Among those who are employing in their factories the co-operative apprentice to-day, and who know the actual results of such employment, we do not understand that there is any controversy respecting the feasibility and unquestioned value of the co-operative course in engineering. It seems to be undisputed that the co-operative apprentices are actual producers in the factory, and that in the university they are doing 25 per cent. more work than regular four-year students. It has brought to our community a class of sturdy young men whom we are proud to admire, and whose success in the future is assured. They learn each day how to apply in a commercial atmosphere the theory they get

in the university and become familiar with modern shop practices and learn the meaning of the words "time" and "production."

The country is aroused on the question of industrial education and to illustrate the necessity, for it we quote from a late communication of Consul-General Mason of Berlin, recently widely circulated in the public press having reference to the report of a German commission sent here to examine American industrial conditions, as follows:

They note the enormous disparity between American and European wages, the high rates charged by express companies and the general heavy cost of handling business in the United States, and conclude that on the whole the American danger has been greatly exaggerated and that a steadfast adherence by Germany to the educational system and commercial methods now in practice will leave the fatherland little to fear in future competition with American manufactured goods.

When it is remembered that this highly educated, efficient and ambitious labor costs the employer only from one-third to one-half the wages that are paid in the United States, and that it is comparatively tractable and easily managed, it will be seen that a situation is being developed here which our countrymen will do well to take into account.

With these conditions confronting us, coupled with the knowledge that we in Cincinnati are actually giving young men practical industrial education through the co-operative course in engineering, we may be pardoned for pointing with pride and admiration to our achievement in this great field of usefulness; and while great educators and teachers clothe themselves with the panoply of great national societies for the promotion of industrial education, and assemble once a year to discuss the feasibility and wisdom of industrial training, we direct attention to the 125 young men in our factories who are actually getting an engineering education under commercial conditions.

Your Committee on Industrial Education has erected a monument to this great cause that will rise in splendor and majesty as time endures, and we believe that at no distant date you will recall with pleasure and satisfaction that you were a member of and contributor to an association which did so much to assist in revolutionizing industrial education.

President Neil assigned to Fred A. Geier, president of the Cincinnati Milling Machine Company, the congenial task of expressing the thanks of the Cincinnati Association to the guests. Mr. Geier's remarks, entirely impromptu, were graceful and felicitous, exciting much enthusiasm. Those present at the dinner were as follows:

Judson Harmon, Governor-elect of Ohio.
John W. Neil, R. B. McGowan, John H. McGowan, Jr., John H. McGowan Company.
Wm. Lodge, Murray Shipley, Wm. E. Scallan, Louis B. Weber, Lodge & Shipley Machine Tool Company.
John P. Ahrens, G. F. Ahrens, Chas. H. Fox, Geo. W. Krapp, Ahrens Fire Engine Company.
E. H. Hargrave, Henry Tschudi, Cincinnati Tool Company.
Robert S. Alter, A. E. Robinson, American Tool Works Company.
Edward J. Spaeth, Dreses Machine Tool Company.
H. M. Lane, Lane & Bodley Company.
Wm. Goodman, W. J. Thompson, Laidlaw-Dunn-Gordon Company.
Chas. E. Berold, W. L. Angert, Printing Machinery Company.
A. R. Murray, N. B. Chace, Cincinnati Shaper Company.
L. Keck, Wm. Peters, Bickford Drill & Tool Company.
Fred A. Geier, P. O. Geier, Geo. Dell, R. J. Maxwell, F. B. Stage, Cincinnati Milling Machine Company.
H. Ritter, C. G. Ritter, Chas. A. Brown, Howard Evans, H. R. Wunder, J. J. Auli, Lunkenheimer Company.
M. E. Pollak, J. A. Pollak, Block-Pollak Iron Company.
L. G. Robinson, J. E. Hust, J. A. Fay & Egan Company.
A. H. Tuechter, W. I. Hall, W. H. Shafer, F. S. Baldwin, S. C. Schauer, Cincinnati Machine Tool Company.
J. C. Hobart, W. Van Ausdall, C. S. Reno, Triumph Electric Company.
Chas. Hoppe, Carl Becker, Philip Gaukel, Chas. Hoppe & Co.
E. E. Finch, Karl Kiefer, Karl Kiefer Machine Company.
B. J. Wolf, Hisey-Wolf Machine Company.
Geo. D. Walker, B. B. Quillen, Chas. Meier, J. H. Williams, Geo. Langen, Cincinnati Planer Company.
O. H. Broxterman, Jno. Steptoe Shaper Company.
W. C. Heindel, Cincinnati Lathe & Tool Company.
W. L. Schellenbach, John B. Morris Foundry Company.
J. T. McGarry, N. Paul Fenner, Jr., American Valve & Meter Company.
F. L. Swanberg, D. T. Williams Valve Company.
E. Von Wyck, Von Wyck Machine Tool Company.
P. T. Laws, G. W. Stiegler, D. P. Hopkins, United States Cast Iron Pipe & Foundry Company.
A. L. Atkins, Geo. E. Goff, Warner Elevator Mfg. Company.
Wm. A. Greaves, Thos. Greaves, J. H. Kline, Geo. Weber, Greaves-Klusman & Co.
Jas. E. Brady, John H. McGowan Company.
H. W. Hoyt, Great Lakes Engineering Works, Detroit.
Wm. Krummel, E. H. Bardes, E. H. Bardes Stove & Foundry Company.
J. H. Renshaw, instructor.
M. Rosen, Industrial Removal Bureau.
C. M. Bigger, Firth-Sterling Steel Company.
H. J. Petrie, Petrie Mfg. Company, Hamilton, Ont.
P. M. Yeater, London Machine Tool Company, Hamilton, Ont.
Robert McEvilley, First National Bank.
H. S. Layman, Layman-Buick Company.
Walter MacLeod, Walter MacLeod Company.
John G. Isham, National Lead Company.
Wm. Gilbert, Buckeye Foundry Company.
Jos. Gilligan, State representative.
N. W. Dingwall, National Metal Trades' Association.
J. C. Richardson, Queen City Supply Company.
H. E. Hall, *The Iron Age*.
Jos. D. Morten, *Iron Trade Review*.
A. V. Perrson, Solvey-Process Company, Syracuse, N. Y.
John F. Hem, St. Louis Metal Trades' Association.
Geo. H. Houston, Houston-Stanwood-Gamble Company.
Edward Robinson, University of Vermont.
Fred Ayer, Herman Schneider, F. C. Hicks, John T. Faig, University of Cincinnati.
J. L. Scherrer, Ohio Mechanics' Institute.
J. E. Frantz, Landis Tool Company, Waynesboro, Pa.
George Burns, J. M. Manley, Cincinnati Metal Trades' Association.

Chemical Engineers at Pittsburgh.

The American Institute of Chemical Engineers will hold its first annual meeting at the Carnegie Technical Schools, Pittsburgh, Monday and Tuesday, December 28 and 29, 1908. The programme includes the following papers:

"Steam Power Plant Economics from the Standpoint of the Chemical Engineer," by Wm. M. Booth.

"Technical Coal Analysis," by Edward Gudeman.

"The Chemical Aspect of Impurities which Cause Scale and Corrosion of Steam Boilers," by J. C. William Greth.

"Testing and Performance of Steam Generating Apparatus," by A. Bement.

"The Examination of Flue Gases in Boiler Tests," by H. August Hunicke.

"The Utilization of Low Grade Fuels in the United States by the Ziegler Process for Coking Peat and Lignite," by O. K. Zwingenberger.

"Producer Gas Installations," by Ernest Schmatolla.

"Work of the Government Fuel Testing Plant at Denver, Colo.," by A. W. Belden.

"Heating of Industrial Furnaces with Pulverized Fuel," by Richard K. Meade.

"Modern Electrical Resistance Pyrometry," by Edwin T. Northrup.

"Chemical Specifications for Sulphite Pulp," by J. A. De Cew.

"An Apparatus for Testing Liquified Ammonia Gas," by F. W. Frerichs.

"The Sanitary Condition of the Southern End of Lake Michigan," by J. Herbert Brewster.

"Cement Manufacturing Methods," by J. G. Dean.

"Some Experiments with the Ferric Iron Contact Method of Making Sulphuric Acid from Smelter Fumes," by Thorn Smith.

"Dryer Calculations and Dryer Design," by William M. Grosvenor.

Excursions have been arranged to important works in the Pittsburgh District, including the Duquesne and Homestead plants of the Carnegie Steel Company, the shops of the Westinghouse Machine Company, the by-product and coke plants at South Sharon and Glassport, Pa., and the beehive coke plants at Uniontown, Pa. An exhibit of chemical engineering apparatus will be made in connection with the meeting.

Exports of ore and metals from Russia in the first six months of 1908 were valued at $7,887,740, against $7,965,505 for similar exports in the first half of 1907. Manganese ore exports fell off from $2,512,685 in the first half of 1907 to $1,638,730. The imports of unmanufactured metals were $6,312,870, against $7,062,710 in the first half of 1907, and of manufactured metals, $27,138,791, against $22,382,680. Imports of machinery and machinery parts were $21,160,835, an increase of $4,454,000 over the valuation for the first half of 1907.

The Pittsburgh Gage & Supply Company, Pittsburgh, has received a contract for installing a White Star continuous oiling system in the Toledo Furnace Company's plant, Toledo, Ohio. It has also taken contracts for installing high pressure steam systems in the Citizens' Ice & Light Company's plant, Huntington, W. Va.; the Durham Cotton Mill Company, Durham, N. C.; the Bristol Gas & Electric Company, Bristol, Va., and the Shenango Furnace Company, Wilpen, Pa.

Copper and Copper Alloys.*

BY J. T. MILTON.

The choice of copper by the marine engineer for steam and other pipes is due to its being thought to possess in a high degree the two qualities of ductility (enabling it to withstand repeated changes of form without failure) and of resistance to corrosion when exposed to ordinary atmospheric influences or to prolonged immersion in either fresh or sea water; yet in many cases these very qualities are found to be altogether wanting.

Failure in Copper Tubes.

Cases have been met with where seamless tubes of ordinary size, say, from 2½ to 3 in. diameter, in which there should be no doubt that a considerable amount of work has been put on the material, have been found to be so brittle as not to be able to withstand the slightest bending. In two such cases, where the tubes had been made in different works, in which opposite ideas prevailed as to the best composition of the material and the proper methods to be adopted for annealing during manufacture, attempts were made to discover the cause of the extreme brittleness, but without success, the only thing discovered being that in both cases, after proper annealing, the metal became possessed of all the normal properties. In another case of precisely similar brittle copper, on the pipe being returned to the makers it was promptly put into the melting furnace, so that no investigation was possible. In the first two cases analyses were made and were said to be normal. It was noted, however, that the copper in one case contained 0.5 per cent. of arsenic, and that in the other it was free from that element; but in neither was there found anything not to be met with every day in good commercial samples of copper. The cases, however, which most frequently perplex engineers are those in which the copper fails when in use, either by erratic corrosion in the cases of water pipes, suggestive of want of homogeneity in the metal, or of fractures in steam and other pipes, apparently through fatigue or else through a local deficiency of ductility. These failures are generally at the parts adjoining the flanges, suggesting that possibly the heating of the metal during the brazing on of the flanges may in some way have altered its qualities. But cases of fracture at flanges have occurred where methods of jointing have been adopted not involving the use of brazing. In many of the cases microscopic examination of the brazing has shown that neither too high a temperature nor too prolonged heating during the brazing operation had been employed.

Information Wanted.

In a recent case of a burst steam pipe, at the Board of Trade inquiry which was held, it was found that test pieces from near one end of the pipe but away from the flange gave markedly inferior results to those obtained from similar pieces taken from the other end, yet both ends of this seamless pipe had been subjected to precisely similar treatment in use. No explanation of this was forthcoming.

We want information on the following points:

1. It is well known what a great influence work has on the quality of steel forgings and rolled materials. It should also be known what is the effect of similar work, either hot or cold, on copper, and what is the minimum amount of work which should be put on the material, either by hot or by cold rolling or drawing in order to convert the unreliable casting into reliable plates, sheets or tubes. The suggestion is ventured that the effect of cold work is very much greater than that of hot work in reducing the coarse crystalline structure of a casting to the condition which gives a silky or porcelain-like fracture, and it is also suggested that some at least of the troublesome cases which have occurred have been due to too little work having been put on the copper in the course of manufacture.

2. What is the proper way to effect annealing, and what is the result of this operation?

Regarding the first of these questions, which should be capable of exact determination, there are considerable differences in practice in different works.

Annealing Conditions.

In all cases apparently it is considered that precisely the same heat treatment is required in the various annealings necessary between the different stages of cold work as in the final annealing of the finished article. This may be so, but it is not necessarily the case that the treatment best suited to the initial casting or ingot is also the best to apply to a finished pipe. It is remarkable what differences prevail in the methods of annealing as practiced in different works, not only in the temperatures which are thought to be appropriate, these varying from faintly visible red to a very bright red, approaching yellow, but also in the time during which the pieces are retained at the annealing temperature. In some cases quenching immediately follows the attainment of the desired temperature, while in others this temperature is maintained for 10 or 15 min. Further, in some cases care is taken that the annealing furnace has always an oxidizing atmosphere, while in others no attention is paid to this point.

It has been stated, and is most probably true, that the composition of copper very materially modifies the annealing effect of any articular temperature, pure copper becoming annealed at a much lower temperature and in shorter time than the ordinary commercial copper. Precise information on these points is much to be desired, as is also the actual effect of each of the constituents found in ordinary copper upon the mechanical properties of the metal. From the published results of the Alloys Research Committee of the Institution of Mechanical Engineers we know that bismuth is extremely prejudicial to copper for all purposes, and that arsenic, even in comparatively large proportions, does not injuriously affect copper for firebox plates. We have a somewhat vague idea that arsenic might even be a desirable constituent of copper for plate, but it would be extremely useful if a comprehensive set of experiments could be made showing the effect of each of the ordinary impurities or constituents on the qualities of copper—namely, on the tensile strength, ductility and resistance to fatigue, as well as on its capacity for hardening under mechanical stress and annealing by subsequent rise of temperature. It is desirable that the mechanical tests should be made both at the ordinary temperature and at the high temperature necessary with ordinary steam pressures. The necessity for the latter was clearly demonstrated by the Mechanical Engineers' Research Committee in treating of the effects of bismuth, which are much more pronounced at high temperatures that when the metal is cold.

With regard to the suggested fatigue experiments, it is desirable that at least the preliminary tests should be made under two sets of conditions, one in which a very small deformation is given at each application of stress and the other in which a measurable permanent set is produced.

Corrosion of Copper and Its Alloys.

When we consider the question of corrosion we want to know the effect of each of the constituents, whether any of them retards corrosion. The impression prevails that pure copper is not so durable as impure copper, yet it is probable that some of the impurities often present in copper might have a prejudicial instead of a beneficial effect, especially if it is found that some of them do not homogeneously diffuse themselves throughout the copper. It is extremely probable that a similar segregation of some of the elements takes place in the cooling of copper ingots, as is so well known to occur in the case of steel ingots, and the consequent want of uniformity setting up galvanic action might be the cause of some of the apparently erratic corrosion so often met with.

Copper-zinc alloys are used in the form of the so-called bronze propellers and large ship castings, brass condenser tubes, tube plates and condenser shell plates, brass bolts, pump rods, valve spindles, turbine blades and packings, sometimes for screw shafts, Muntz metal sheathing for ships' bottoms and for wharf piles, &c. The use of these alloys for such a multiplicity of purposes is due to their possessing in general great strength and ductility, some of them rivaling steel in these quali-

* From a paper read before the Institute of Metals, Birmingham, England, November 12, 1908. The author is chief engineer surveyor, Lloyd's Registry, London, England.

ties, and at the same time being able to resist the corrosive action of sea water. However, frequently these alloys are far from durable or reliable. Muntz metal sheathing becomes rotten, pump rods, studs, &c., also decay in a peculiar manner. The decay commences at the surface and gradually proceeds inward, while the metal preserves its usual metallic appearance until fracture occurs. When filed it appears to be bright, but when broken it shows a dull brown fracture.

Other cases of trouble are sometimes met with in brass bolts used to secure the planking of composite vessels. In two such cases so many of the bolts broke at the screw threads that the whole of the bolts in both ships had to be renewed. Each set was made by a different firm and each was supposed to be far superior in strength to ordinary yellow metal bolts. In neither case was there any decay such as has just been referred to, the vessels being comparatively new. The bolts in each case were forged from bars—*i. e.*, the heads were formed by upsetting, but the fractures all took place at parts not affected by the forging. The size of the bars used (⅝-in.) precludes the idea that there was insufficient work of rolling put on the metal in one case. In the other case the bars were not rolled, but were made by the extrusion process.

In each case two analyses were made of the material. They were as given below:

Ship A.—Bolts Made from Rolled Bars.

	No. 1. Per cent.	No. 2. Per cent.
Copper	51.45	52.09
Zinc	46.06	44.80
Manganese	1.51	1.55
Iron	1.00	1.50
Tin	Traces.	Traces.
Lead.		

Ship B.—Bolts Made from Extruded Bars.

	Per cent.	Per cent.
Copper	54.89	55.69
Zinc	41.35	41.827
Manganese	1.00	Not looked for
Iron	1.50	1.25
Tin	0.87	0.74
Lead	0.50	0.62

Essential Tests for Shipbuilding Material.

In both cases a high tensile strength was claimed for the metal, but the opinion is ventured that more copper and less zinc would have given much better bolts for actual use, even if they showed a somewhat lower tensile strength. The use of extruded instead of rolled bar should not be sanctioned without exhaustive tests being made as to the mechanical properties of the material. While dealing with rods, bolts, &c., made from copper-zinc alloys it is desirable that we should know more than we do about the necessity of annealing the rods after rolling, and also as to the proper methods and temperatures to be used for annealing purposes.

Quite recently some tests were made of some rolled bars of special alloy which were exported. They were all made from the same composition, but the results varied as here given:

Diameter of bar. In	Tensile strength. Tons per sq. in.	Extension per cent in 2 in.
4	28.53	41
3½	28.69	42
2½	31.58	35
2	34.08	29
1½	33.0	30
1	37.1	20

From a forging 9 in. diameter made from the same alloy the following results were obtained.

	Per cent.	Per cent. in 4 in.
Lengthways	29.5	32.2
Crossways	29.0	33.5

The differences were evidently due to the fact that the small bars were finished rolling at a low temperature, which was not possible with the larger bars. The excess of strength imparted by the cold rolling would probably be lost by annealing, and judging by analogy with other materials the hard, strong, cold rolled bars would not be so safe for use with varying loads as the softer bars finished at a red heat. It is of course also possible that in the case of these particular large bars, if made from small ingots, more work put on the material would have been an improvement.

The Structure of Copper Alloys.

When the proportions of copper and zinc are about those of the atomic weights of copper and zinc the alloy is homogeneous, consisting of the chemical compound CuZn, any slight excess of copper or zinc which might be present being in solution in the CuZn. Similarly, if the proportions are about those of the chemical compound Cu_2Zn the metal is again homogeneous. If the copper exceeds this proportion the metal appears also to be homogeneous, being then apparently a solid solution of Cu (or possibly of Cu_3Zn_2) in Cu_2Zn, but in the cases of metals intermediate in composition between Cu_2Zn and CuZn, the metal under ordinary conditions of heat treatment possesses a duplex structure, consisting of intermingled proportions of Cu_2Zn and CuZn, the latter of which, when a polished surface is etched, has under direct illumination a darker appearance than the Cu_2Zn, which, at any rate with light etching, retains its mirror-like polish. Tertiary or other alloys in which the main constituents are copper and zinc of about the same relative proportions as the above, such, for instance, as some of the so-called bronzes, possess the same general duplex of complex structure. There is no doubt that it is largely due to this duplex structure that Muntz metal and some other similar alloys sometimes corrode or decay so rapidly through galvanic action, one of the constituents only being attacked and losing its zinc, while the other retains its normal composition.

It is not generally recognized what a great influence heat treatment has on the structure of these alloys. At a bright red heat the two constituents mutually dissolve into one another and the duplex structure disappears, the metal becoming apparently homogeneous. When quenched out from this temperature the metal appears to consist of crystals, each with its own peculiar orientation, but each being homogeneous.

If the metal is allowed to cool just a little below a certain critical point and is then quenched it is seen that a separation of Cu_2Zn has commenced along the boundaries between adjacent crystals. Quenching at a little later stage shows the separation of the same substance proceeding in each crystal from the boundaries inward, at a further stage the separation becomes apparently complete and the structure is duplex throughout, the actual form of the structure as seen being fairly regular in each crystal, but varying from crystal to crystal, and evidently dependent upon the orientation of the crystal. After the structure has once become duplex, if the temperature is maintained for a short time at a red heat below that at which the mutual solution of the constituents takes place, further changes occur, inasmuch as although the general character of the structure remains constant it becomes much coarser, the fine particles of the Cu_2Zn apparently segregating together. While, however, the metal at first sight appears to be much coarser it will be found that the individual crystals have not much altered in size, and they can in general be traced partly by what may be called the pattern or orientation of the duplex structure and partly by their boundaries being clearly traceable.

Heat Treatment and Copper Tin Alloys.

Some time ago an eminent manufacturer, whose gun metal work has a reputation wherever steamers float, made some experimental castings of 90 Cu 10 Sn composition. One was cast in chill, one in sand, while some of the same metal was allowed to cool out extremely slowly in the furnace. The differences in structure were enormous, the crystals in the last case having linear dimensions at least 10 times as great as those in the chilled casting. In this foundry it has been found that with gun metal castings the temperature of pouring has a great influence on the quality of the castings. From the experiment cited, and seeing that, however hot the metal is when poured, it must pass through the same freezing temperature just above which it was liquid and just below which it becomes solid, the opinion is ventured that the real cause of differences of quality is the different speeds of cooling or rather of freezing. In the case

of the pouring at high temperature just before freezing commencing the mold surface has become very highly heated, so that it does not extract heat from the freezing metal so rapidly as is the case in the similar molds where the metal is not so highly heated before pouring, and where freezing consequently takes place quicker. If this reasoning is correct, it would appear that in order to obtain the same quality in the finished article the metal for large and thick castings should not be so much heated as that used for thinner work. With gun metal as with other metals the effect of slow freezing is to increase the size of the crystals, and in large castings which necessarily freeze slowly the crystals frequently reach exceptional dimensions. By a crystal is meant a portion of the metal in which all the parts have the same orientation.

Gun Metal and White Metals.

It has been shown in the case of copper-zinc alloys possessing a duplex structure that at a particular temperature the two constituents mutually dissolve one another, and that when this has occurred, if the metal is quenched, we obtain an alloy which is practically homogeneous. It is a matter well worthy of research whether a similar result would not obtain in the case of gun metal—namely, whether instead of a comparatively strong skeleton of crystals filled up with a weaker alloy, we could not obtain by suitable heat treatment an alloy truly homogeneous with possibly improved mechanical properties.

With regard to gun metal castings generally we want reliable data as to the effect on the strength and ductility of different temperatures, at least up to the highest temperatures at which they are likely to be used for boiler mountings, and we also require to know the effect at these various temperatures of such impurities as are often found in so-called gun metal. An erroneous idea appears to prevail among some founders that a little lead is an improvement to the quality, permitting the castings to be made more sound. One effect of lead, however, is very materially to reduce the tensile strength and ductility when cold. In some tests made a few years ago a casting thought to be of excellent quality only had a tensile strength of 9½ tons per square inch instead of 14, the falling off being entirely due to the lead present in the metal. It is exceedingly probable that lead is still more fatal in the case of castings which have to be used at a high temperature.

White metals for lining bearings offer a very wide field for research. There are numerous brands submitted for use, for each of which special qualities are claimed. It cannot be expected that any one composition is at the same time the most suitable for use in bearings running with a light load and in others with a heavy load, with oil lubrication, and also for bearings like propeller shaft bearings running in sea water without oil. Also it is very probable that bearings such as those of railroad carriage axles, in which the load is constant when rotation ceases, and in which therefore the lubricant may be squeezed out between the bearing and journal at the points of highest pressure, require a different metal to prevent seizing under these conditions from the ordinary engine bearings in which, while the working load may be of the same intensity when running, it yet becomes wholly or partly removed when rotation ceases. A case has recently occurred where a metal was used for stern shaft bushes which had given good results for the main bearings of a marine engine. It was one of the brands containing a large percentage of lead. The result was such corrosion of the metal before the vessel reached her destination that both shaft and bearings had to be renewed. Engineers want information as to which metals will and which will not give satisfactory results in sea water.

Effect of Lead on Babbitt Metal.

Another very interesting case occurred with some main bearings in which a metal of the copper-tin-antimony type (so-called Babbitt metal) was used. It was reported that this metal was wearing off in flakes like sheets of paper, and that these flakes stopped up the oil ways. A careful examination of the metal and of the flakes showed that what really occurred was the following: The metal contained a definite quantity of lead, which had been purposely added to give it a desired amount of yielding under heavy load. In these metals the whole of the copper combines with a definite amount of tin, forming crystals of a hard and brittle compound. The antimony also combines with about an equal weight of tin, forming cubical crystals of $SbSn$. When freezing takes place these two sets of crystals separate out first, leaving the remainder of the tin and the lead, both liquid, mutually dissolved in one another. As the cooling of an alloy of lead and tin proceeds (as was shown by the late Sir W. Roberts-Austen) part of the tin is the first to solidify, leaving at last the interspaces filled up with the lead-tin eutectic. Such metals, therefore, will always soften at the temperature at which the lead-tin eutectic (tinman's solder) melts—namely, at 356 degrees F., whereas if no lead is present the softening point is the melting point of tin—namely, 448 degrees F.

What had happened in this case was that some parts of the bearing had been allowed to attain a temperature somewhat exceeding 356 degrees F., the lead-tin eutectic had melted at these parts and had squeezed out in the form of minute tears, which, being carried round into the colder parts of the bearing, had formed the thin laminæ which were thought to be parts of the metal becoming exfoliated. Analyses of the metal of the flakes clearly demonstrated the accuracy of the above explanation.

White Metals and Shop Secrets.

In the case of white metals, as with other metals, the rate of cooling has an enormous effect upon the crystallization and structure of the metals, and this ought to be realized by the users of these metals. As was suggested in the case of gun metal castings, the rate of cooling is considerably affected by the temperature of pouring and the temperature of the bearing into which the metal is poured, yet sufficient attention is not given to this, the matter being left to the ordinary workman, who is never a skilled metallurgist. More than one case of bad results obtained with a metal known to be of suitable composition can be attributed to this cause.

The opinion prevails among some engineers who make their own white metal that the quality is influenced by the order in which the various metals are melted and combined. The author made some experiments on this point on a metal of the tin-copper-antimony type by making a metal of definite composition by three separate sets of steps, all different from the orthodox method. All, of course, resulted in metals which when fused possessed the same chemical proportions, and when the resulting metals were cooled out under identical conditions as to rates of cooling the microscopic structures were in each case identical with those of the metal mixed in the orthodox manner. These results indicate that as regards white metals shop secrets, or mysteries of mixing, have only a fancy value, and that although some particular methods may have value as regards convenience, or even as to accuracy of the final product, they are not essential as regards the quality of the bearing metal.

A Cleveland Exposition Proposed.—Cleveland manufacturers have decided to hold an exposition next spring, at which will be exhibited the thousands of manufactured products made in the city. The matter was taken up by the Chamber of Commerce a few days ago on the suggestion of F. F. Prentiss, president of the Cleveland Twist Drill Company and former president of the chamber. At a meeting of many of the leading manufacturers the matter was discussed and the project met enthusiastic approval. To carry out the plan President Charles S. Howe of the Chamber of Commerce has appointed a committee consisting of over 100 members, nearly all of whom are manufacturers, about all the important manufacturing plants being represented on the committee. F. F. Prentiss was named as chairman. The exposition will be held in May or June and will last about two weeks. It will take place in the Central and the Grays armories, and perhaps other auditoriums.

TARIFF HEARINGS AT WASHINGTON.

Manufacturers' Views on Rates in the Metal Schedule.

Many manufacturers and importers are filing statements and briefs with the Ways and Means Committee relating to the pending tariff revision. Among those filed the past week were a number dealing with matters treated in the metal schedule of the present tariff, as follows:

IRON ORE.

Statement of Ennis & Co., Philadelphia, Pa.

As I am in the business of importing and assembling foreign iron ores for pig iron and steel making purposes, probably anything I may say favoring the repeal of the present duty on iron ore will be received with suspicion of self-interest, but that this view would be unfair to me I trust will develop ere the close of this letter. I have been in the foreign ore business for half a lifetime and am, I think, very conversant with such sources of supply and probable quantities available to this country. With the exception of Cuba, and to some extent Newfoundland, I believe that unless new deposits are discovered and operated the repeal of the entire duty of 40 cents per ton would not in itself add much tonnage to our iron ore imports. I say this for two prime reasons: 1. As soon as the repeal became effective foreign miners would demand part of the duty in higher prices. 2. Any increased demand for transports would advance freights, and that portion of the duty not obtained by the miner would be taken by the ship owner. But the Eastern smelter would greatly benefit by insurance, to the extent of the duty, against increased cost through miners' higher demands and of increased cost of transportation. It is said that the United States Steel Corporation owns or controls some 60 per cent. of the Lake Superior iron ore production, and enjoys sufficient influence over the remaining 40 per cent. to shape its policy; hence at any day a lake ore combination may increase the ore cost to independents to a point where operation would be impossible.

The really poor end of the steel business is the end that creates its prime necessity—pig iron—while the high prices made possible for steel have conferred great benefit on steel itself, benefit that the manufacturer of pig iron has not been able to share in anything like due proportion. I know furnacemen with their worldly goods invested in pig iron plants who are as poor to-day as 10 years ago, the spread in the selling price between pig iron and steel having all along been unfair to pig iron.

In conclusion, I have every hope that your wide investigations will uncover the truth—truth that the American ore producer will not be disadvantaged one iota through the repeal of the iron ore duty, and that the pig iron producer by reason of its repeal will be able to carry on his avocation with less menace to his business welfare. In fact, increased importation of the foreign low phosphorus ores free of all duty would stimulate the development of domestic mining (and consequent increased employment of domestic labor), especially in the Eastern States, where iron ore properties remain unworked because phosphorus in the ore is too high to make merchantable iron without the admixture of ores low in phosphorus which are best available from foreign sources free of duty. On the other hand, if, in order to be consistent, the repeal of the ore duty would mean the encouragement of repeal or a lowering of the present duty on pig iron, then it were better to leave the duty on ore where it is, for be assured, that pig iron can stand no reduction from the present duty. One has only to glance at foreign free-on-board pig iron prices, and add the ocean freight rate, insurance and charges to realize the blow to our Eastern makers by any lowering of the tariff on pig iron. Whether the duty on iron ore stands or is repealed will make no difference to the writer, as he sees it. He speaks unselfishly for a great interest (pig iron) in the Eastern portion of this country that stands in urgent need of your wise conclusions.

IRON ORE, PIG IRON AND INGOTS.

Statement of Frank Samuel, Philadelphia, Pa.

Being impossible to treat such an extensive subject as the metal schedule of the Dingley tariff at such short notice, he will confine himself entirely to presenting to your committee the subjects as covered by clauses No. 121, iron ore and manganiferous iron ore, &c.; No. 122, iron in pigs, iron kentledge, spiegeleisen, ferromanganese, ferrosilicon, wrought and cast scrap iron and scrap steel, &c.; No. 135, steel ingots, cogged ingots, blooms, slabs, &c. The articles in the clauses named are used as a basis of cost for all iron and steel manufactured products.

The importation of iron ore to the United States, paying a duty of 40 cents per ton, for the year 1906 was 1,060,390 tons, and for 1907, 1,229,168 tons. Of the tonnage specified 639,362 tons were shipped from Cuba in 1906 and 657,133 tons in 1907. The production of iron ore during the same period in America was 47,749,728 tons in 1906 and 51,720,619 tons in 1907. The greater part of the ore imported was for special purposes, for which the American ore could not be used, and a further tonnage of the ore was again exported in finished material, for which the manufacturer received in return 99 per cent. of the duty. The revenue derived by the United States for the importation of ore is, consequently, a small factor. The prices of American lake ores, which regulated the prices of other ores in the United States, were as follows:

Standard Bessemer ore, f.o.b. lake ports: Average price for six years, 1894-1899, $2.48; price 1900, $4.50; average price for six years, 1901-1906, $3.51; price 1907, $4.75; price 1908, $4.75.

It will be seen that due to various causes the price of American ore has almost doubled in the last 10 years. It is a well-established fact that the cost of labor per ton on lake ores in the past 10 years has been most materially decreased, due to the improved methods of mining, and the increase in cost has been entirely due to increased capitalization and the increased royalties paid to the ore properties and increased cost of rail transportation. Consequently, 40 cents per ton to-day, charged to the ore user, is merely a tax in the making of pig iron to such furnaces as find it necessary to buy this mineral, due to their special requirements. Labor is not benefitted nor the revenue of the country materially increased. According to the schedule, manganese ore is on the free list at the present time.

Paragraph No. 122: "Iron in pigs, iron kentledge, spiegeleisen, ferromanganese, ferrosilicon, wrought and cast scrap, iron and steel scrap, $4 per ton duty." This duty has been in effect since 1897, during which time the price of pig iron has made wide fluctuations. Taking the ordinary making of pig iron, it requires 2 tons of ore to 1 ton of pig, or, where foreign ore is used, the difference in the blast furnace in using foreign ore would be in the neighborhood of 80 cents per ton. The present duty on pig iron is $4 per ton. If all foreign ore was used in making a ton of pig iron, the duty would be 80 cents. The maker is, therefore, protected against the importation of foreign pig to the extent of $3.20. One dollar and fifty cents per ton for labor more than covers the cost taken by blast furnaces; consequently the duty on pig iron is excessive, even on the basis of the present duty on ore. If your committee would consider favorably the appeal for a reduction of $2 per ton on the duty of pig iron, it would not only give the blast furnaces ample protection for their labor, but would materially aid the users of pig iron, and not only prevent exorbitant profits being made by the makers of iron, but would prevent the wide fluctuations that have at times taken place, due to unnecessary protection given to the manufacturers by an unnecessary duty. Scrap iron and steel scrap, under paragraph No. 122, takes a duty of $4 per ton. There can be no argument given either as to the labor on scrap iron or the revenue derived from the maintenance of this tariff or for its continuance.

Ferromanganese.—While this is included in the schedule, taking duty of $4 per ton, manganese ore, from which it is produced, is on the free list, due to the fact that there is an insufficient supply of manganese ore found in this country, and while manganese ore was originally placed on the free list with the purpose of inducing manufacturers to enter into the production of ferromanganese, there is at present practically but one maker of ferromanganese in this country, and there has been practically no increase in the tonnage produced for some time. The importation of ferromanganese for the year 1906 was 84,359 tons, and for the year 1907, 87,400 tons, and inasmuch as every maker of steel is compelled to use a percentage of ferromanganese, there is every indication that the importations of this material will increase materially in the coming years. Inasmuch as the giving of free ore has not induced the manufacture of this material here, and inasmuch as every steel works is using it, there would not appear to be any further necessity for the duty on this material. There would not only be the direct benefit to every steel manufacturer, but no injury done to any material interest in this country by giving the users free ferromanganese.

Paragraph No. 135.—Steel ingots, cog ingots, blooms, &c. As the duties covering the articles under this heading are most complex, and inasmuch as the framers of the Dingley tariff found the necessity of making the duty specific as well as ad valorem, according to the character and price of the material to be imported, and inasmuch as every article in finished steel, excepting cast steel, is at one time or another in the shape of a billet or ingot, the duty to be charged on it must be considered from the objects manufactured from the dutiable article. As a general principle, however,

free ore and free pig iron, or $2 per ton duty on pig iron, would be a material aid to the manufacturer of steel, and a corresponding reduction of the duty should be made on billets to conform to the reduction of duty above stated. The base duty at present existing being three-tenths of 1 cent per pound, or $6.72 per gross ton, and inasmuch as the loss in the use of pig iron in the open hearth furnace is only about 5 per cent., the present duty on billets is excessive and should hardly be more than the duty on pig iron. The actual cost of labor per ton on billets in this country, due to our improved machinery and methods, would not exceed the average cost of labor per ton in the English mills. Evidence of this fact can be produced before your committee if you so desire.

The importation of billets in 1906 was 21,300 tons, and in 1907, 19,334 tons. Our exports of billets during the same period was in 1906 192,618 tons, and 79,931 tons in 1907. In other words, for the actual protection of the manufacturers no duty at all would be required. The billets, however, that were imported to this country were probably of special quality not produced here, no billets being imported of the quality exported. The export of billets in itself, even with the duties on pig iron and ore, is evidence that as far as the protection of manufacturers is concerned, or labor interests, there is no need of the duty in question. On the other hand, with the materials asked for the exportation of the articles named would be further aided.

Additional evidence that manufacturers of iron and steel products need no further protection to enable them to give their labor the highest and best returns is in the fact that in publishing reports of the largest maker in this country—and, in fact, in the world—of pig iron and billets is that during the period of the existence of this corporation it has made an average profit over a period of five years of $14 per gross ton, and in its published report of the last three months' operations, where it produced on an average of 60 per cent. of its capacity, its averaged profits were in the neighborhood of $12 per ton.

MANGANESE STEEL.

Statement of the Taylor Iron & Steel Company, High Bridge, N. J.

The Taylor Iron & Steel Company, High Bridge, N. J., respectfully suggests in view of the recent development of the manufacture of manganese steel, *i. e.*, steel containing not less than 7 per cent. manganese, and the many forms and shapes of useful articles manufactured therefrom, such as safes, vaults, rails, frogs or switches for steam, electrical or industrial railroads, grinding or crushing machinery or parts thereof, excavating or dredging machinery, or parts thereof, car wheels, &c., that the new act should contain a separate and distinct clause for manganese steel so that all uncertainty as to its classification will be eliminated.

After more mature consideration of the whole subject than could be given in the short time allotted prior to the filing of our brief on the 25th of November, ultimo, we conclude as to this article specific duties are preferable to ad valorem, and suggest the following as reasonable and necessary to the continued success of this industry in the United States:

All manganese steel—*i.e.*, steel containing not less than 7 per cent. manganese, whether cast, forged or rolled, valued at 3 cents and not above 6 cents per pound, 2 cents per pound; valued above 6 cents and not above 9 cents per pound, 3 cents per pound; valued above 9 cents and not above 12 cents, 3½ cents per pound; all valued above 12 cents per pound, 4 cents per pound.

This will not afford abnormal profits, but is believed to be the minimum duty that will protect this industry, in which the element of labor is by far the greatest factor.

It may be further said that home competition is rapidly growing and the consumer is assured of reasonable prices from this cause.

The Taylor Iron & Steel Company is pre-eminently within that class referred to by Mr. Carnegie in his recent article in the December *Century*, page 202, wherein he says:

The republic has become the home of steel, and this is the age of steel. It may probably be found that there exists the small manufacturer of some specialty in steel which steel needs a measure of protection. The writer hopes, if such there be, the committee will give patient attention to such cases. It is better to err on the side of giving these too much rather than too little support. Every enterprise of this kind should be fostered. The writer speaks only of the ordinary articles and forms of steel as being able to stand without protection.

BAR IRON.

Statement of the Pittsburgh Forge & Iron Company, Pittsburgh, Pa.

It has come to our notice through the public prints that some of the manufacturers appearing recently before the Ways and Means Committee have advocated or suggested a change in the differential between the duty on steel and iron bars and a lowering of the present duty on iron bars. We wish to do what we can to counteract any impression that may have been given your committee that any considerable portion of the manufacturers of iron bars are in sympathy with such a change, believing that if such statements were made they were uttered without full and careful consideration of the subject.

Our company is one of a large number of independent manufacturers of iron bars in this country, employing a large amount of labor, and our product in this line is being sold to-day at or below cost. The price of iron bars is largely regulated by the price of steel bars, both commodities being used for practically the same purposes. The manufacturer of iron bars employs almost four times the labor in the production of a ton of iron bars that is employed in the production of a like amount of steel bars; consequently a differential in the protective duty is but fair.

The introduction of improved machinery and methods in the manufacture of steel, which machinery and methods are not applicable to the manufacture of iron, has served to so reduce the selling price of both steel and iron bars as to make it impossible for the iron manufacturer to get any return on his investment except in the most prosperous times, when prices rise to a living basis. We are firmly of the belief that any reduction of the duty on either of these commodities that will make possible the importation of any quantity of either steel or iron bars will so affect our markets that many of the small independent producers of iron bars will be forced out of business or great reductions in labor be made necessary, and thus in either event work great hardships on many thousands of men engaged in the iron industry, many of whom are getting up in years and could not well adapt themselves to any other business.

We earnestly protest against any reduction of the present duty on iron bars, and believe we voice the opinion of a large majority of the iron manufacturers.

Statement of James A. Coe & Co., Newark, N. J

Yqp are no doubt familiar with the present high tariff rates on Swedish bars and billets. The quality of the Swedish ores is much superior to any of our native ores for the manufacture of tool steels. The method of manufacture is by a charcoal process; frees the Swedish bar from injurious effects of sulphur coal the native ore is remarkably free from phosphorus. Swedish bars are used entirely for the manufacture of English tool steels. Our American manufacturers use but a small percentage, if any, of Swedish stock in the manufacture of their different grades of tool steel.

As we have no American substitute for this Swedish stock, I urgently request that you seriously consider the expediency of making a marked reduction in tariff rates. The American tool steels could be improved to a marked per cent. if the manufacturers were permitted to use Swedish bars and billets. With the reduction of cost that would ensue by the use of Swedish stock at lower cost there would be a marked improvement in the quality of American tool steels.

In relation to the tariff on English tool steels, which is now 2 cents per pound on steels valued at not more than 10 cents per pound, f.o.b. Liverpool, there should be a corresponding reduction of at least ½ cent per pound on the imported product.

PIPE, RODS, BARS AND PIG IRON.

Statement of Godfrey L. Cabot, Boston, Mass.

I write to urge the removal of the duties on iron pipe, rods, bars and pig iron. I have suffered to the extent of many thousands of dollars a year by reason of these duties, and this loss will increase as my business increases.

Ten years ago I went abroad with the intention of establishing agencies for the sale of American iron pipe in the different countries of Europe. As I had for 15 years been a buyer of American iron pipe in increasing quantity, and for cash, and had never asked a single maker of pipe to take my note in payment of a bill, I had an excellent credit and was buying American iron pipe of all the different manufacturers at prices that were decidedly favorable as compared with what other buyers in this country were paying. For instance, in the year 1895 I sold a lot of second-hand 2-in. pipe to the Standard Oil Company at precisely the same price that I got by telegram the same day for new pipe from the Oil Well Supply Company, the same size and quality.

Nevertheless, I found in England, France, Switzerland, Italy, Turkey, Russia, Norway, Sweden and Germany American iron pipe selling at less than I could lay it down for, showing that others were buying American iron pipe for export at a considerably lower price than I could buy it, and that I was hopelessly handicapped by the very reason that I was a large buyer for use in this country, which ought to have helped me, and would have under normal conditions.

I respectfully protest against a system which compels American citizens to pay a much higher price for American goods than the same are sold to Europeans.

STRIP, PLATE AND SHEET STEEL.

Statement of Edgar T. Ward & Sons, Boston, Mass.

After years of litigation, at enormous cost to the importers, and during which time they were obliged to pay the excessively high rate of 45 per cent. duty, amounting to many thousand of dollars, it has finally been determined by the United States courts that strip steel is properly dutiable at specific rates under paragraph No. 135, and it is now

being imported at from 1.3 to 4.7 cents per pound. Yet under the proposed new paragraph, following paragraph No. 135, a high rate is to be imposed, which will either increase enormously the cost to the consumer or prohibit its further importation. Even now American strip steel practically monopolize this market, and is sold at a much lower price than the imported article can be.

No good, sound reason can be advanced why strip steel should be assessed at the unjust and absurdly high rate proposed, or why it should not remain at the specific rates under paragraph No. 135, where the highest courts have determined it properly belongs. So long as the Government is to depend upon customs duties for a large part of its revenue, there can be no fairer or safer principle than to impose reasonably low and living rates on foreign articles that compete (though to a very limited extent in the case of strip steel) with American products turned out at a lower cost and selling in the open market at lower prices.

Paragraph No. 141 was intended to place an additional duty upon certain forms of steel that had been put through some additional process of tempering, bluing or polishing to give it an added surface finish, and was undoubtedly for the further protection of American steel producers on account of the labor, manipulation, and cost of such additional processes.

It is now proposed to exact this additional duty upon steel that has been cold rolled only. (See *The Iron Age* of November 19, 1908, p. 1445, Par. No. 141.) It has been decided by the courts of last resort that cold rolled steel, without any further polishing or brightening process, does not come within the provisions of paragraph No. 141, largely upon the ground that no apparent reason could be found for such additional duty. This litigation covered especially, if not entirely, cold rolled strip steel, and the proposed change is no doubt aimed directly at steel in that form.

Strip steel, cold rolled only, is assessed for duty under paragraph No. 135. The thinner it is desired, the more times it has to be passed through the rolls and the greater its value becomes, and consequently the higher the rate of duty under said paragraph. The rolling necessarily gives it a certain brightness, but that brightness adds in no way to its value. It is not rolled with that purpose in view at all, but simply and solely to get the desired thickness, or rather thinness. The brightening is simply incidental to the process of rolling and cannot be avoided, and that it can serve no possible purpose is shown by the fact that in the further processes of manufacturing such steel into the various articles for which it is used it is always and invariably heated, which absolutely destroys any brightness there may be upon its surface.

Bearing in mind that this steel is already assessed under paragraph No. 135 at rates increasing according to the number of passes through the rolls, because the repeated rolling increases its value, and also incidentally its brightness, and, further, that the domestic interests even now are demanding in this revision of the tariff an entirely absurd and unreasonable increase in the duty on cold-rolled strip steel (see third new paragraph of the new text as published in *The Iron Age*, above mentioned), what justifiable or even plausible reason can possibly be adduced for placing an additional duty upon it on account of a brightness of surface which is not aimed at, is incidental to the process of manufacture, adds nothing to its value, serves no purpose whatever, is destroyed as soon as the steel reaches this country, which is produced without any additional labor and without adding 1 cent per 1,000,000 tons to the cost of its manufacture?

If among the thousands of demands being made by the domestic interests in this proposed revision of the tariff there is one that is unreasonable and unjustifiable, it is this one.

Statement of the Simonds Mfg. Company, Fitchburg, Mass.

In the matter of the revision of the Dingley tariff we beg to submit for the consideration of your honorable committee the recommendation that the clause in paragraph No. 128 which reads, "Steel bands or strips untempered, suitable for making band saws, 3 cents per pound and 20 per centum ad valorem; if tempered or tempered and polished, 6 cents per pound and 20 per centum ad valorem," should be stricken out, and that in paragraph No. 135 should be inserted after the clause, "saw plates, wholly or partially manufactured," the following: "Steel bands or strips untempered, suitable for making band saws," and that at the end of the paragraph there should be added: "Provided, that on steel bands or strips, tempered, or tempered and polished, suitable for making band saws, there shall be paid 30 per centum ad valorem in addition to the rate provided in this act for steel bands or strips untempered, suitable for making band saws."

Paragraph No. 141.—That the clause which reads "and on steel circular saw plates there shall be paid one-half of 1 cent per pound in addition to the rate provided in this act for steel saw plates" should be stricken out.

The effect of the changes desired would be to make the duties on "steel bands or strips, untempered, suitable for making band saws," and on "steel circular saw plates" the same as on "saw plates, wholly or partially manufactured," and to preserve approximately the same increase in duty on "steel bands or strips, tempered, or tempered and polished," compared with "steel bands or strips, untempered," as exists in the present tariff.

Our reasons for asking these changes:

1. All crucible steel for whatever form of bars or plates is first produced in the form of ingots and afterward rolled down to the form and thickness and sheared to the shape adapted to its ultimate use. Steel bands or strips, untempered, suitable for making ingots, are of different money values per pound, but the selling price is regulated by the value of the ingots used plus the labor of rolling and shearing, and the losses due to shearing to specified shapes. Therefore, if the ingot values, labor, or shearing losses in any one of the steel products referred to are more than in others, the result would naturally be that they would be invoiced at a higher price per pound, and thus be required to pay a higher rate of duty, and it seems a decided injustice to place the tariff on steel bands or strips, untempered, suitable for making band saws, and on circular saw plates of a given value per pound, on a higher plane than the duty on other saw plates of the same value per pound.

2. It appears from the Government statistics of imports of steel bands or strips, untempered, suitable for making band saws and steel circular saw plates, and from figures which we have made up covering our purchases of these same articles imported for us, that we consume a majority of the total imports coming under these two headings.

We beg to state in this connection that the printed statistics of imports of steel bands or strips, untempered, suitable for making band saws, for the fiscal years ended June 30, 1903 to 1907, inclusive, are apparently incorrect, for during each of those five years we purchased more imported steel coming under this heading than is shown in the statistics as having been imported. So far as we have knowledge, the statistics of imports for this item for the fiscal year ended June 30, 1908, appear correct, and it is on this last year's figures that we base the statement earlier in this paragraph.

We would further state that we do not import in our own name, but buy from the United States agents of the foreign mills.

3. The extra duties now levied on these two articles make it necessary for the consumers of saws made from these plates to pay a higher price, in order that they can have goods of the quality required for their work.

4. We are forced to buy certain steel plates from foreign producers, as we are unable to obtain from mills in this country such plates and bands of the high quality and continuous uniformity that we require.

5. We are in a neutral position as to any revision of the existing specific duties on saw plates and other steels as now in effect under paragraph No. 135, and only ask for the changes above outlined, in order that the present discriminating duties on steel bands or strips untempered, suitable for making band saws and steel circular saw plates, may be eliminated.

HOOPS, BANDS AND COTTON TIES.

Statement of Wallace H. Rowe, President Pittsburgh Steel Company, Pittsburgh, Pa.

As a manufacturer of steel hoops, steel bands and steel cotton ties, and the authorized representative of other manufacturers of this class of product, I beg to submit to you the following suggestions as to tariff on these commodities:

Our average wages per day for years 1906, 1907 and 1908, were as follows:

	1906.	1907.	1908.
	$4.85	$4.88	$4.93
Heaters	2.99	2.99	3.06
Rolling mill hands	2.82	2.78	2.79
Mechanics	1.99	1.99	1.99
Laborers			

Average wages for same work in Germany and Belgium:

	$1.65 to $1.88
Heaters	1.88 to 2.35
Rolling mill hands	1.16 to 1.43
Mechanics	.75 to .83
Laborers	

The ocean freight from seaports of Germany and Belgium to our Atlantic Ocean and Gulf ports is less than the railroad freight from steel manufacturing centers to the same destinations. Hence, these advantages of the foreign manufacturer can be met, if the tariff is removed, only by such reduction of wages as will enable us to meet that competition at the Atlantic seaboard. Of course, as you recede from the Atlantic seaboard these factors change in our favor, because the railroad freight rates diminish relatively on our products and increase on the foreign products.

Is is therefore evident that if the tariff is taken off steel hoops, steel bands and steel cotton ties, we must reduce or surrender the Atlantic Coast and Gulf trade to the foreigners. This will include substantially the entire cotton tie trade, because all of the cotton is baled at Atlantic and Gulf ports or nearby points. Furthermore, the producers of cotton realize a profit instead of being at an expense in the use of cotton ties in the baling of cotton, for the reason that all

cotton is sold at the total gross weight, as shown per bale. This includes bagging and ties.

HIGH SPEED STEEL.

Statement of B. M. Jones & Co., Houghton & Richards and Edgar T. Ward & Sons, Boston, Mass.

The proposed change in paragraph No. 135 of the steel schedule (see *The Iron Age* of November 19, 1908, pp. 1444, 1445) substituting an ad valorem rate on the various kinds of steel covered by said paragraph, valued above 16 cents per pound, instead of the present (excessive) rate of 4.7 cents per pound, is evidently aimed at foreign high speed steel, which is imported in considerable quantities for the use of American makers of steel tools. The change is no doubt inspired by interested parties, for while the suggestion of a blank ad valorem rate would probably have no special significance to persons not familiar with the steel trade, yet to those in the trade it means an increase in duties beyond the prohibitive point.

Judging from the present ad valorem rates on steel and its manufactures and the ratios which the specific rates bear to the value of the merchandise, any ad valorem rate in paragraph No. 135 on steel valued above 16 cents per pound, which domestic interests would ask for, would mean an increase in the duty on high speed steel of from 100 to 300 per cent.

Under present conditions American high speed steel is being sold to manufacturers of steel tools for less than the price of the foreign, without the addition of the duty; which proves conclusively that it can be produced in this country at a less price than the foreign article can be laid down in New York or Boston, even if it were on the free list. Although, as we have said before, high speed steel is imported in considerable quantities, yet it is a very small item in comparison with the amount of tool steel produced and used in this country, and it could not be imported at all (even at the present rate of duty, which is excessive), but for the fact that the American tool makers find it necessary to use the foreign steel to produce certain tools of a certain quality. But there is a limit to the price that American manufacturers can pay for imported tool steel, and any material increase in duty over the present rate of 4.7 cents per pound would in our opinion exclude the article entirely from this market. If we are right in our judgment, then the bald proposition is simply this, that the United States Government shall forego and surrender the revenue it is now receiving (which amounts, figured upon the statement made to your committee on November 25, 1908, by the Primos Chemical Company, Primos, Pa., to about $1,128,000 per annum) from duties on imported high speed steel, and American mechanics shall be compelled to use inferior tools, for the sole purpose and object of adding to the already enormous profits of the great American steel corporations, who are admittedly the lowest cost steel producers in the world, or, in other words, to enable the American steel producers to seize and appropriate to themselves the small fraction of the market that foreign high speed steel has been able to command up to this time by reason of its special and peculiar qualities.

We beg, further, to call the attention of the committee to the fact that the chief argument of the American producers in the past—to wit, that protection was needed because of the duty on tungsten, which enters largely into the manufacture of high speed steel, and which necessarily had to be imported—no longer avails, for large deposits of tungsten have been found in this country, several of the steel companies having their own tungsten mines, and it can now be obtained in the United States at a lower price than from any foreign country. We again assert that the present rate of 4.7 cents per pound is excessive; that it lays an unnecessary burden upon the American tool maker and the American mechanic; that a lower rate would add, to a certain extent, to the revenue of the Government and would tend to increase the production in this country of superior and high grade tools; that the American steel producers have no legitimate claim for protection against a foreign article that sells in this market, even without the duty added, at a higher price than their own products.

In an article in *The Iron Age* of November 12, 1908, E. T. Clarage of Chicago, president of the Columbia Tool Steel Company, characterizes the European manufacturers as being "at the tail end of the procession," and later, in the same article, asserts, "There is no doubt that some exceedingly good steel is manufactured in Europe. This we do not deny, but we have never yet analyzed a piece of European tool steel which could not be duplicated or excelled in this country by any one of half a dozen leading tool steel makers, and with much more uniformity, in addition to being sold at a lower price."

If this is true, and we know he is correct about prices being lower, why is there any need of protecting the American tool steels unless it be to enrich the makers at the expense of the consumers and to destroy the healthy competition of foreign steels at the expense of the Government's revenues?

In conclusion, we respectfully ask, in the interest of the Government, the consumer, and ourselves, that no ad valorem rate be substituted in paragraph No. 135 for the present specific rate on steel valued above 16 cents per pound, but that the rate be made specific at 3½ cents per pound instead of 4.7 cents per pound, as in the act of July 24, 1897.

STEEL HARDENING METALS.

Statement of the Electro-Metallurgical Company, Niagara Falls, N. Y.

We beg to submit our reasons for asking that in the coming revision of the tariff you give special attention to the status of ferrosilicon, ferrochrome, ferrotungsten and the other ferroalloys (except ferromanganese, which is in a different category, and with which we are not concerned), and of the metals which are the most valuable components of those alloys.

We ask (1) that the rate of duty be made clear and certain; (2) that the duty be equalized on the articles mentioned and be an ad valorem one; (3) that the duty be made a reasonable one on them all.

It is not so now on the ferros we speak of (except ferrosilicon). They are not mentioned in the law by name, and it has been held in court that they are not "metals unwrought," because they are not capable of being wrought, and that they are therefore dutiable by similitude to ferromanganese at only $4 a ton, although some of them are worth over $4000 a ton. (United States *vs.* Roessler & Hasslacher Chemical Company, 137 Fed., 770, C. C. A., Second Circuit, New York.) But later another court held that certain bronze hardening alloy, not any more capable of being wrought than our ferros, was properly dutiable at 20 per cent. ad valorem as "metals unwrought." (Thomas *vs.* Wm. Cramp & Sons Ship & Engine Building Company, 142 Fed., 734, C. C. A., Third Circuit, Philadelphia.)

So, while for a time the foreign ferros were admitted at the trivial duty of $4 a ton, they (except ferrosilicon and ferromanganese) are now being assessed at 20 per cent. ad valorem to await the final result of renewed litigation. A new case was made, which was decided by the Board of United States General Appraisers in favor of the 20 per cent. assessment, but this is now pending on appeal in the United States Circuit Court in Philadelphia (Lavino r. United States, Hempstead *vs.* United States, and Hampton *vs.* United States). The result of that litigation will doubtless be favorable, but we submit that the law should be made clear beyond peradventure.

As the foreign ferros have been admitted at one time at only $4 a ton, and possibly may again secure that rate of duty by some court decision, the domestic interests cannot go ahead with the development of their expensive plants with the requisite assurance of stability.

The reason which once existed for putting ferrosilicon at $4 a ton duty no longer exists. This rate, the same as that on pig iron, originated when ferrosilicon was made in a blast furnace only, contained only 10 or 12 per cent. of silicon, and was worth about $20 a ton, making the duty equivalent to about 20 per cent. ad valorem. It may be added that spiegeleisen and ferromanganese have always, even up to date, been made in blast furnaces only.

Ferrosilicon to-day, besides being still produced by the blast furnace, can be and is made by electro metallurgical processes to contain as high as 75 per cent. or more of silicon, and this is worth from four to eight times as much as the lower grade article. It is not right that these different products should carry the same per ton duty, and an ad valorem rate will give the proper proportion in the duty automatically, because the value varies with the silicon content. Each one of the other ferros also varies in the content of its valuable material—the chromium, tungsten, &c.—and takes a correspondingly variable price. Here, also, an ad valorem rate is the only feasible one. And ferrosilicon and the other ferros (except ferromanganese), being made of varying grades and values by blast furnace, or electric furnace, or chemical process, should all be put on a parity in the tariff.

Of course, the duty should be levied on the metals themselves—chromium, tungsten, &c.—at the same rate as on the ferroalloys of them, since otherwise there would be great inducement to evasion of the intended duty. Moreover, our arguments are applicable to both the metals and their alloys.

The present duty of $4 a ton on ferrosilicon has seen the decay of many blast furnaces in the United States which formerly produced the low grade, while, on the other hand, the electric furnaces cannot effectively compete in high grade ferrosilicon with the foreign product on the basis of the present duty.

The duty on all the ferroalloys (except ferromanganese) and the metals from which they derive their chief characteristics, should be put at 30 per cent. ad valorem. A less rate than that will not place the industry upon a stable basis and enable it to successfully compete with foreign producers.

There ought to be no dispute of our statement concerning the cost of the ferroalloys. The official record of the cases now pending in Philadelphia shows that the ones actually involved there had a foreign value of $4317 per ton

for the ferrovanadium, of $1032 to $1991 per ton for the ferrotungsten, and of $98 to $715 per ton for the ferrochromium.

The amount of protection which we ask is, of course, based on the supposition that the ores which are our raw materials remain, as they are now, on the free list. Naturally, if these are made dutiable (as to which we say nothing now), we should need a correspondingly higher rate of duty on the ferroalloys, &c., so as to have the benefit of an appropriate differential.

ANTI-FRICTION BEARINGS.

Statement of the Excelsior Steel Ball Company, Buffalo, N. Y.

Prices of balls and ball bearings have been forced downward now by foreign competition. The small cost per ball or bearing that goes into the average machine is so slight that it does not take many cents to equip a sewing machine, a bicycle, or a roller skate with ball bearings throughout, so that there cannot possibly be any hardship to the general public by allowing the present tariff on balls and ball bearings to remain as it is, or rather increase it, so that American industries can be better protected.

The ball bearing industry is comparatively young, and in our judgment should be fostered, because it is only by taking care of anything that results can be obtained. This argument can be applied to anything under the sun, whether it be something of natural or mechanical growth. If a seed is planted, care is given to produce the best results, and results show that care has been taken. So it is with any new industry; care must be taken to produce a natural, healthy growth. It is rather discouraging to call on a customer and offer an article that has had good honest work placed on it, and good money paid for the making, and to be calmly told that the same article can be brought over from Germany for a lower price. The writer has had this actual experience, and we do not think that it is because that any other country has better men or better machinery, but simply that labor can be bought cheaper. It is not as if the present price of balls and ball bearings were prohibitive, because we have endeavored to show that to equip a sewing machine or similar article costs but a few cents. It is the fact of these bearings being so cheap that makers of sewing machines, &c., have adopted the ball bearing, thereby making very easy running machines and conferring a boon on humanity in general. We are often told that surely the laborer is worthy of his hire, and surely the manufacturer should be protected for the expenditure of his energy and brains when his life is devoted to producing something that will prevent friction.

Statement of the Timken Roller Bearing Axle Company, Canton, Ohio.

We earnestly insist that in place of a reduction of the tariff on roller bearings there should be sufficient to afford fair remuneration to our workmen employed in this industry. Feeling the need of a broader market, we have recently concluded an arrangement to manufacture our roller bearings in England, as we had no hope of creating a foreign market for our goods made in this country, due solely to the fact that the existing rate of wages in this country is far in excess of that in England. The cost of the raw material for our bearings in England is but little less than we pay here. However, owing to the fact that our cost of labor will be so much less in England than in this country, we will be enabled from that point to compete with the foreign maker in his own legitimate territory. This situation demonstrates the fact that it is the price of labor that alone renders it impossible for the American manufacturer to compete with others engaged in a like industry in Europe.

We believe that in order to safely maintain the wages that have been paid in the past to employees engaged in this industry there should be an increase of the tariff rate of at least 20 per cent. We earnestly urge that the above increase be granted, not alone for ourselves, but for our workmen, upon whom eventually must fall the burden of invited foreign competition.

TABLE CUTLERY.

Statement of Committee Representing American Manufacturers of Table Cutlery.

The manufacturers of table cutlery respectfully submit for your consideration that their total sales in 1896 were approximately $2,000,000; in 1906, $3,000,000.

That they have no trust, combination, or agreement as to selling prices.

That their total capitalization is $2,500,000, much less than the actual amount invested.

That on this capitalization in the last 10 years dividends have not averaged over 6 per cent.

That selling prices on their entire output are from 10 to 20 per cent. lower than in 1896.

That 70 per cent. of the cost of production is labor.

The margin of profit being, as above shown, small, no serious reduction in selling prices to meet foreign competition can be made except largely at the expense of the wage earners.

In the endeavor to meet the committee's views we submit for consideration a schedule which shows substantial reductions through the entire list, both on specific and ad valorem duties, and on common knives and forks, which represent in dollars one-third at least of the entire production of the trade, the reduction is from 45 per cent. to 25 per cent. ad valorem. More than this the industry cannot stand without serious detriment.

We earnestly urge a minimum and maximum tariff in place of the present reciprocity treaty with Germany, which puts a premium upon undervaluation and leaves us powerless to prevent it. If such be adopted, the duties here submitted should be fixed as the minimum rates:

Table, butcher, carving, cooks', hunting, kitchen, bread, butter, vegetable, fruit, pie, cheese, plumbers', painters', pallet, artists', and shoe knives, forks and steels, finished or unfinished.

	Each. Cents.	Present rate. Cents.
With handles of mother-of-pearl, shell or ivory	14	16
With handles of deerhorn	10	12
With handles of hard rubber, solid bone, celluloid or any pyroxylin material	4	5
With handles of any other material than those above mentioned, except as below noted	1	1½

In addition, on all the above articles, 15 per cent. ad valorem, provided that none of the above named articles shall pay a duty of less than 40 per cent. ad valorem.

Table knives and forks, commonly called "scale tang," with riveted handles of cocobolo, ebony or bone, 25 per cent. ad valorem.

Blades, handles or other parts of either or any of the above articles imported in any other manner than hafted shall pay a duty of 50 per cent. ad valorem.

This last paragraph is to prevent blades and handles being imported, as now, at a low rate of duty and being put together here, obviously taking advantage of the obscurity of the present bill to avoid payment of proper duties.

The steel parts, we are advised, now come in under paragraph No. 135, under the clause "steel in all forms and shapes not specifically provided for," at so much per pound. We cannot find at what rate the handles are dutiable at present. In our opinion, the duty should be made so high on goods imported in parts that the goods themselves come in in a finished condition in their proper class.

FIREARMS.

Statement of the Winchester Repeating Arms Company, New Haven, Conn.

We understand that your committee has been approached by importers of foreign arms to the end that they may induce your honorable body to reduce the present existing tariff on this class; and we wrote to protest against any material change in the present arrangement, which to the best of our belief does to-day leave the foreign manufacturer of these goods with material advantage.

In the manufacture of guns two classes of machines are chiefly used the world over—namely, a standard form of Lincoln milling machine and a so-called edging or profiling machine. In the ordinary manufacture these machines are run by operatives who are not mere mechanics and who have no actual trade. On the Continent milling machine operatives, who form the larger proportion of those manufacturing guns, receive from $3.50 to $4.50 per week. In this country it is practically impossible to employ people for the same work at less than $2.25 to $2.50 per day, or $13.50 to $15 per week; and the same is practically true of the wages of all other employees engaged in this line of manufacture. It is, therefore, safe to say that the Continental labor cost is not over one-third of the domestic labor cost. For an example of the working of the present schedules, let us take $100 worth—factory cost—of guns. This is divisible into two main factors, as follows:

Factory cost	$100
Labor	80
Material	20

The foreign manufacturer may have a slight advantage in the purchase of some of the material; in the purchase of steel, for instance, he pretty certainly has, as many of the American manufacturers purchase a considerable proportion of this material abroad. The same can be said of the wood—walnut of various kinds—for stocks and forearms. For the purpose of the present argument, however, this advantage, which only covers 20 per cent. of the entire cost of the gun, may be disregarded. It is in the matter of labor cost that the Continental manufacturer has the greatest advantage:

The $80 labor cost to the American manufacturer in the $100 value in guns amounts on the Continental basis to	$26.67
To which add cost of material on the American basis	20.00
And we have the Continental factory cost of	$46.67
Add to this a profit of, say, 12½ per cent.	5.83
And also add the extreme duty (for guns of more than $10 value), $6 each; and the 35 per cent. ad valorem (say, 5 guns at $10.40 each)	48.38
	$100.88
To the American manufacturer's factory cost of	$100.00
Add a profit as allowed above to the foreign manufacturer of 12½ per cent.	12.50
Makes	$112.50
Which compared with the foreign manufacturer's New York duty-paid price of	100.88
Gives the foreign manufacturer an advantage under the present schedule of	$11.62
Or practically 11½ per cent.	

The foregoing, coupled with the fact that large numbers of foreign guns are annually imported at such prices that the American manufacturers can but barely compete with them, will, we believe, convince your committee that the present basis is fairly and equitably adjusted to all concerned, and does not unduly protect the American manufacturer or leave him in position to monopolize the domestic market.

Statement of the Hopkins & Allen Arms Company, Norwich, Conn.

Regarding tariff on firearms, we wish to enter our protest against any change being made in the present duty.

As labor is the larger part of the cost in manufacturing this class of goods we cannot compete with the foreign labor market.

This class of goods is being sold by the American manufacturers at very reasonable prices, and we are supplying the market with a very much better grade of goods than was formerly imported.

We believe there is every reason why this industry should be protected, and no good reason why the present duty should be changed in any respect.

Statement of the Savage Arms Company, Utica, N. Y.

We desire particularly to call your attention to recoil operated automatic pistols, an article not manufactured in this country in 1897, and consequently not scheduled in the act of that year. Under the decree of the United States Board of General Appraisers, dated June 21, 1908 (abstract 15,900, T. D. 28,278), automatic pistols were classified as side arms under paragraph No. 154, and subject to a duty of 35 per cent. ad valorem.

Believing that automatic pistols resemble more closely revolvers than side arms, and that they should pay duty as revolvers, we request that paragraph No. 158 be amended to provide that revolving pistols, magazine and automatic pistols, and parts thereof, be subject to a duty of 75 cents each and 25 per cent. ad valorem.

In the manufacture of firearms fully 80 per cent. of the cost of construction is labor, the amount of material consumed in each individual arm representing but a minimum of its finished cost. Cheap labor in European countries enables foreign manufacturers to produce goods at much lower prices than American manufacturers.

All of the work of the American manufacturer is done in the factory, while the European manufacturer farms out his work to families, and his factory is largely an assembling plant. The work on the American firearm is done by skilled mechanics, who receive from $1.50 to $3.50 per day, while the foreign manufacturer, we are credibly informed, pays from 40 to 80 cents per day for the same class of work. Consequently, if the American manufacturer is to be permitted to remain in business and American labor given employment in this art, the schedule should at least remain as adopted by the law of 1897.

Doubtless your committee will receive many requests for a reduction in the schedule of firearms. Analyze these requests, and you will find that they come from dealers and importers who are desirous of marketing foreign made goods in competition with the American made product; and we respectfully protest against a reduction of the tariff for any such purpose. A firearm is a luxury, and should bear a larger share of the burden of revenue than a necessity.

Permit us to advance one further argument covering the general situation—namely, that manufacturers of firearms should be given every possible help and encouragement by the Federal Government, for the reason that in time of serious warfare they might be of inestimable service to the country at large. Consequently it would seem to be the duty of Congress to preserve and protect the interest of home manufacture to the utmost extent.

ALUMINUM.

Statement of the Aluminum Company of America, Pittsburgh, Pa.

All the foreign aluminum companies are protected by tariff either on both ingot aluminum and on aluminum sheet, wire and other semifinished forms, or in some instances on only the latter. In France, where the largest number of aluminum companies are located and where the conditions for manufacture are most favorable, the tariff is 17½ cents per pound on both ingots and semifinished forms.

The largest use for aluminum abroad is for military equipment for infantry. The German, French and other foreign governments buy large quantities of aluminum, and thus give to the aluminum factories located in their borders a large and permanent trade which cannot be taken away, while necessarily in the United States the field has only been in general consumption—in domestic utensils, wire for electrical conductors, &c.—and to create this market is a very considerable source of expense to the United States producer.

During 1905, 1906 and the first part of 1907 the foreign producing capacity was no more than equal to the foreign consumption, and, in fact, for a short period was so much less that an acute shortage existed, accompanied by a rise in price. This condition caused the five then existing foreign companies to increase their plants and induced seven new companies to erect aluminum plants, so that now the foreign aluminum producing capacity is at least six times the foreign consumption of even the good years of 1906 and 1907. All the foreign companies thus not only have immense surplus producing capacity, but have large surplus stocks of aluminum. This condition is not a temporary result of the present commercial depression, but is a condition which will continue for many years to come, and is compelling all the foreign companies to turn to the United States market, as is shown by the constantly increasing importations and by the fact that the domestic producer is being met on every sale by a flood of foreign quotations at constantly lowering prices.

The aluminum business lends itself with unusual ease to the disposal of "surplus" or excess product. From behind their prohibitive tariff wall of more than double the United States tariff the foreign aluminum companies can and do quote their surplus stock, delivered in New York, at prices substantially less than the cost of production in this country, and which, even with the United States duty added, compete with the domestic prices which only give a fair profit to the domestic producer.

Foreign aluminum producers sell for export at 12 to 13 cents per pound f.o.b. New York. The domestic price of aluminum is from 20 to 22 cents per pound, which is as low as aluminum can be manufactured and sold under United States conditions of manufacture.

In view of the large amount of labor required in the production of aluminum, the great disparity between labor costs of this country and abroad, and the higher price of raw materials and plant in this country, the present tariff on aluminum is only an adequate protection and is necessary if aluminum is to continue to be produced in this country to give employment to American workmen and provide a reasonable profit on the capital invested. The retention of the present tariff is all the more a vital necessity to the American manufacturer on account of the immense surplus producing capacity in Europe and the extraordinary effort which will for many years be made to dispose of, from behind their prohibitive tariff wall, surplus product at surplus product prices which are much less than the cost of production in this country.

Trimmings from aluminum sheet and old sheet, wire, castings, &c., are easily melted over again and run into ingot shape. A large number of metal merchants abroad make a practice of getting together this junk or scrap aluminum, remelting it into ingots, and offering it on this market as new aluminum. As is the case with other metals, such remelted ingots are, for certain purposes, nearly as good as new. As the price of scrap on all metals in all countries is only about 60 per cent. of the value of new metal, such remelted ingots can be put on the market at considerably less cost than new metal. There is a large quantity of this scrap, and, as it is more easily sold away from home, where the liability of detection as to its real grade or the liability for redress for damage resulting from its use is very little, this country is always seriously affected by the foreign scrap market, and hence a tariff is not full protection against such sales, as, for instance, the present 8-cent tariff, while it serves as an 8-cent tariff against new metal, is only an effective tariff of some cents less as against the importation of scrap.

The aluminum business has only been ordinarily profitable. Dividends have only been paid by the Aluminum Company of America in 11 years out of 20, and the average dividend for the 11 years has been 8 per cent. on a very conservative cash capital, making an average return to the stockholder of less than 4½ per cent. During 1908 no dividend has been paid. The position of the Aluminum Company of America is due not to combination, control of raw material, &c., but to meritorious patents, the chief ones of which have been taken out by its officials and have been adjudicated by the United States courts. These patents have in the main expired and will all expire within a few months.

There is no general demand for a reduction in the aluminum tariff. It can be confidently stated that the aluminum consumers in this country are satisfied with the price of aluminum and progress of the industry. The only efforts for a reduction in tariff are made by the foreign manufacturers and the metal brokers in this country who represent them.

Aluminum is a concentrated product, and at slight cost can be moved from one market to another. The cost of its manufacture is directly or indirectly very largely labor, much more so than of any other metal. The wages paid in its manufacture are three times those paid by foreign producers. To utilize the mines and water powers in this country, long freight hauls are necessary, while the reverse is true abroad. The raw materials required pay a duty. Foreign producers are protected by a prohibitive tariff and can and do invade this market with surplus product at rates impossible to meet without the tariff, and they throw into this market their scrap. The profit of the business has been only ordinary and there is no demand from the United States consumers for a reduction in tariff.

BUILDERS' HARDWARE AND LOCKS.

Statement of the Russell & Erwin Mfg. Company, New Britain, Conn.

Our company is one of the foremost producers of builders' hardware and locks in America. Our product is covered by paragraph No. 193, under Schedule C of the customs tariff act of 1897. The rate of duty there imposed, 45 per cent. ad valorem, has been sufficient to protect us against foreign competition, and we consider it adequate. The hardware industry has prospered under this rate of duty, and yet this measure of protection has not fostered monopoly, insured inordinate or unreasonable profits, nor wrought injury to the interests of the consumer. We plead, therefore, that the present rate of duty upon builders' hardware and locks, 45 per cent. ad valorem, be retained in the tariff bill which the Committee on Ways and Means will shortly formulate.

Efforts which our company has made during the past year have been unsuccessful in securing the cost figures of foreign-made hardware which we would have liked to present to your committee in comparison with American costs of the same articles, in support of our contention that the rate of duty at present imposed upon such articles is not unreasonable. We can lay before you, however, selling prices of certain articles of French and English manufacture, and set against them the cost, exclusive of profit or selling expense, of reproducing such articles in America.

For purposes of comparison we have selected two classes of goods: From the French, the very highest quality bronze hardware, hand chased, in the cost of which 65 per cent. is labor. From the English, goods of the cheapest possible description in which labor figures 52 per cent. of the total cost as produced in this country. These two classes of builders' hardware, extremes in both quality and cost, have been selected as typical because of the bearing of each class upon the question of labor, the one showing the greatest possible ratio of labor to the total cost, the other the least. Little hardware of this high standard is produced and it is supplied from abroad, notwithstanding the 45 per cent. duty against it. Its high price, even as made in French factories, restricts its sale; and in a large degree it is, under present conditions, noncompetitive with high grade American hardware. The English goods, however, would, if admitted free or at a materially lower duty, come into competition with our hardware, notwithstanding the fact that they are not of a distinctly American type. English and German manufacturers have always been very alert to meet the demands of foreign markets, and with the barriers let down they would undoubtedly flood our markets with goods of this class made to conform to American tastes, or preferences and to fulfill American requirements of service or duty.

It should be constantly kept in mind that in the table given below the French or English figures state the selling price, which undoubtedly comprises a reasonable manufacturer's profit. The American figures, on the other hand, give only the actual cost of production with no addition for profit, and with no provision for expense of marketing the goods.

Article.	Selling price.	American cost.
French hardware:		
Escutcheons A, each	$3.28	$8.94
Bolts B, each	12.71	46.94
Drop handle C, each	2.67	7.39
English hardware:		
Chain door fast D, dozen	.60	1.08
Door knocker E, dozen	1.38	1.62
Door knob F, dozen	4.09	4.80
Knob, drop and rose G, set	2.58	3.07
Shop door lock H, dozen	1.76	2.33
Push plate I, dozen	.86	1.20
Push plate K, dozen	.78	1.44
Push plate L, dozen	.90	1.68
Drawer pull M, dozen	.40	.47

The instances cited have been chosen at random from a considerable list of foreign made goods upon which we have computed costs. Examples might be multiplied indefinitely, but as these are altogether typical it seems unnecessary to burden the argument.

The selling prices given in this memorandum are those prevailing in the home markets of the producing countries. They are not export prices, made to work off surplus product with but small regard to cost. They are the prices at which the makers sell to their own people, and it is a fair presumption that they include a manufacturer's profit. A comparison of these figures and an analysis of the costs of foreign goods as reproduced in this country forces the following conclusion: That even with the present rates of duty American hardware makers are powerless to compete with French manufacturers of the highest type of hand finished goods; that the duty of 45 per cent. now imposed upon hardware is not more than enough to exclude ordinary commercial lines of English wares; and that any, even moderate, reduction in the tariff upon goods in which labor is so large a factor, as from 52 to 65 per cent. of the total cost, must have the effect of crippling the manufacturer and discouraging capital from investment in the hardware business or of reducing labor to conditions which prevail in the English hardware trade.

As bearing upon these conditions we quote the statement recently made us by a brass founder of Birmingham, that the operations of brass grinding and brass polishing in his establishment were performed by boys and girls at wages of from 50 to 75 cents a day. This is the hardest and most exhausting kind of labor, which the enlightened American employer would consider it absolutely wrong to require of girls, women or even of young boys. The English manufacturer quoted protested against it, but excused the practice as one imposed upon him by the conditions of trade. This same work is performed in the trade in this country by men alone at wages ranging from $1.80 to $2.50 per day. The statement referred to, taken in conjunction with foreign prices of builders' hardware, forces the conclusion that this instance is typical of English industrial conditions; and that, if the barriers now set up against the importation of English goods are measurably relaxed, English rates of wages and standards of living must eventually prevail in the American hardware industry.

To sum up, then: The hardware industry has prospered under the protection afforded by the terms of the Dingley tariff. The industry has not been centralized in a few hands during this era of protection, but has remained an open trade, dominated by no trust, but distinguished by progressive and earnest competition, which has made for increased efficiency of plants and improved economical methods of production. The rise in the price of builders' hardware during this period has not exceeded (if, indeed, it has equaled) the ratio of increased values in other items of building construction, indicating that it is not through oppression of the consumer that the industry has flourished. The rates now ruling fail to shut out the importation of the highest quality of French hardware; but as the demand for such goods is small and their manufacture is not now being carried on in America, no exception is taken to this fact nor any desire expressed for a higher rate of duty upon such goods. A lower tariff upon English and German hardware than is now enforced will eventually open our doors to heavy importation of medium grade and cheap goods which our foreign competitors, with their aptitude for imitation, will quickly pattern after American types. It is self-evident from consideration of the selling prices of foreign makers that any material reduction of the tariff must extinguish the profits of American hardware makers unless the wage rate now in force in their trade be materially reduced. Because labor is so important a factor in the cost of hardware any revision of the tariff schedules which does not take full account of the widely different wage conditions in the industry at home and abroad will react most disastrously upon the scale of living of operatives in the trade which we represent. The manufacturer would have but two alternatives open to him; to so reduce his labor costs as to bring them on a parity with those of his foreign competitor, due allowance being made for such measure of protection as the new tariff might afford, or to go out of business.

A Canadian Iron Ore Deposit to Be Worked.—Frank Murphy, 604 Morgan Building, Buffalo, N. Y.; Chas. Lahey, Port Arthur, Ont., and others have secured a grant from the Canadian Government covering 12 claims of 140 acres each, located about 5 miles south of the Katigan Depot, on the Canadian Northern Railroad. This property contains a vein of magnetic iron ore in one continuous formation for 1½ miles. The vein is described by Captain Wood, the only expert who has so far examined the property, as the largest deposit of magnetic ore yet found in Canada. The narrowest part of the vein is 25 ft., with outcropping of 250 ft. The lowest assay that has been made from the surface ore shows 48.75 per cent. metallic iron, 0.067 per cent. phosphorus and 0.087 per cent. sulphur, and without a trace of titanium. A recent assay made by J. Raymond Trevor, Kashabowie, Ont., shows 58 per cent. metallic iron, 0.058 per cent. sulphur and 0.037 per cent. phosphorus. This vein is identical with and in the vicinity of the well known Atikoken mine operated by Mackenzie & Mann. Plans are now being arranged for the development of the property, which will also include 5 miles of track from the Canadian Northern Railroad.

The two new blast furnaces of the Youngstown Sheet & Tube Company, Youngstown, Ohio, are making some splendid records for output. On December 7 Furnace A made 574 tons of standard Bessemer iron, and on a number of days has made 560 tons. Furnace B, started very recently, has made 417 tons. Within a short time these furnaces will be making 1000 tons a day or more. The company has completed the work of enlarging its wire plant at Struthers, Ohio, and is now prepared to fill orders for staples and barb wire.

Charles M. Schwab's Tariff Testimony.

WASHINGTON, D. C., December 15, 1908.—The Ways and Means Committee to-day gave an extended hearing to Charles M. Schwab, president of the Bethlehem Steel Company, on the metal schedule of the proposed new tariff bill. While Mr. Schwab came before the committee by invitation and not for the purpose of urging his views, he testified with much frankness and proved an excellent witness for the stand-pat element in the iron and steel industry. He urged the retention of the Dingley rates for the metal schedule on the ground that without the protection supplied by the present law it would be impossible to continue the production of iron and steel in the United States on the existing basis with respect to wages and the prices paid by the iron and steel makers for their ore, coal, coke, limestone and miscellaneous supplies. If Congress were willing to put American labor on an equality with foreign labor, he said, it would be entirely practicable to make iron and steel products in the United States as cheaply as in any country in the world. Under close cross examination Mr. Schwab said that he thought a slight reduction might be made in the duties on certain articles without seriously hampering the industry.

The committee expects to hear Andrew Carnegie later in the week and it is possible that Judge E. H. Gary and William E. Corey of the United States Steel Corporation, may be requested to testify before the close of the hearings now in progress, but it has not been positively determined.

After Mr. Schwab had stated that he was the president of the Bethlehem Steel Company, but that that concern was in no way affiliated with the United States Steel Corporation and that his personal connection with the latter was limited to a stockholding, he was asked by Mr. Payne as to the authenticity of a letter recently introduced in evidence by H. E. Miles of the National Association of Manufacturers, said to have been written by Mr. Schwab to Mr. Frick in 1899 stating the cost of the production of steel rails at that time. Mr. Payne read the letter in part as follows:

PITTSBURGH, PA., May 15,, 1899.

My Dear Mr. Frick: You asked me to give my views as to the probable future earnings of the Carnegie interests and as to the proposed reorganization on a basis of $100,000,000 bonds, $250,000,000 preferred stock and $275,000,000 common stock. Permit me to say that, commencing in 1879 as engineer constructing the works, 10 years as general superintendent of our principal works, and over two years as president, I feel that I know the properties and their possibilities as well, or better, than any one in or out of the concern.

While we have been highly successful in the past, as every one knows, I believe we are only now getting in shape to be truly successful and truly profitable. Our April profit and loss sheet shows earnings slightly over $1,500,000, with rails netting us only $17.50 and billets $16. Lowest prices we ever had, on an average, were $16.50 for rails and $14.50 for billets, so you see we have reaped very little of the advantages of increased prices. With prices anywhere near to-day's selling prices we could easily make over $3,000,000 per month, and then our new works to be started in two months will, I estimate, on present prices, bring us an additional profit of $600,000 per month, or a total of $3,600,000 per month.

As to the future, even on low prices, I am most sanguine. I know positively that England cannot produce pig iron at actual cost for less than $11.50 per ton, even allowing no profit on raw materials, and cannot put pig iron into a rail, with their most efficient works, for less than $7.50 per ton. This would make rails a net cost to them of $19. We can sell at this price and ship abroad so as to net us $16 at works for foreign business, nearly as good as home business has been. What is true of rails is equally true of other steel products. As a result of this, we are going to control the steel business of the world.

You know we can make rails for less than $12 per ton, leaving a nice margin on foreign business. Besides this, foreign costs are going to increase year by year, because they have not the raw materials, while ours is going to decrease. The result of all this is that we will be able to sell our surplus abroad, run our works full all the time and get the best practice and costs in this way. Very truly yours,

C. M. SCHWAB, President.

After Mr. Schwab had declared the letter to be authentic, his examination continued, as follows:

The Chairman: Were those facts stated in that letter true at the time?

Mr. Schwab: Yes.

The Chairman: You stated there that you knew positively that England could not produce pig iron at actual cost for less than $11.50 per ton, allowing no profit on raw materials. Was that true?

Mr. Schwab: At that time it was.

The Chairman: And could not put pig iron into rails, with their most efficient works, for less than $7.50 per ton?

Mr. Schwab: Quite right.

The Chairman: Which would make a net cost to them of $19?

Mr. Schwab: Quite right.

The Chairman: While you could make them for less than $12?

Mr. Schwab: Yes, sir.

The Chairman: So that the relative cost of making steel rails at that time in this country and England was $7 less here than there?

Mr. Schwab: That is not quite right, but very nearly so.

The Chairman: Now, we will hear your explanation.

Mr. Schwab: First of all, I want to say that that letter was written as an enthusiastic and optimistic young man seeking preferment in a great company.

The Chairman: Well, what was your age at that time?

Mr. Schwab: Well, we will let the worthy chairman guess at that.

The Chairman: You have no conscientious scruples against stating your age, have you?

Mr. Cockran: Better let us know your age, so that we can measure the enthusiasm for truth.

Mr. Schwab: Mr. Cockran can be assured of its truth. It was written in an optimistic vein.

Mr. Cockran: It is entirely true?

Mr. Schwab: Yes, sir, it is. Secondly, that letter was written from the point of view of the manufacturing department; in other words, while president of the company, I was particularly in charge of operation, and was anxious to make the best showing possible in that department. That $12 per ton was actual mill cost, and it included none of the general charges which should be incident to any great business.

The Chairman: What did it include?

Mr. Schwab: I am going to tell you. The actual cost of making steel rail, other than interest charges, depreciation, and similar charges, which were always made by the auditing department, in making up the yearly report.

The Chairman: Including the office force?

Mr. Schwab: Including the office force at the works, but none of the general charges of selling or administration. The English cost did include it; and I will give you this cost in detail, if I may.

The Chairman: We would be very glad to have the costs right now.

Mr. Schwab: I should be glad to do that. Thirdly, I want to explain the motive of that letter. The letter was written at Mr. Frick's solicitation. It was at a time when he was anxious to dispose of the Carnegie Company; and it was also written in an optimistic vein for a like reason. If you will bear that in mind in reading that letter you will probably understand it better. Now, I will go to the cost, as to how I arrived at a cost of $12, at that time, for making rails, which was quite true then. We were leasing our ores at that time in the Northwest. We were not large owners of ores. We started out to buy them. But we were purchasing and leasing ores, as people familiar with the trade will recollect, at 10 cents and 15 cents a ton. The cost of mining in the Mesaba—because that was about the time the Mesaba ores were being mined entirely on the surface, and there was no depth mining at all—that was being done at a cost of 15 to 25 cents a ton, so that our cost of ore at the mines at that time was about from 35 to 40 cents a ton. Now, we transported those ores to the lakes for from 60 to 70 cents a ton. We transported them on the lakes for 60 cents a ton, and we transported them from the lakes to Pittsburgh for 70 cents a ton more.

Mr. Underwood: That makes $2.40.

Mr. Schwab: I think that is right—in Pittsburgh for these ores. Now, if you will divide by 58 per cent., which was then the average amount of iron in the ore, you will get the cost of the ore to make a ton of pig iron.

The Chairman: About $2, is it not?

Mr. Schwab: It is more than $2. If you will divide by 58 you will get at the exact figure; 58 per cent. was the contained iron in the ores in that year. It makes quite a difference between 50 per cent. and 58 per cent. I will divide it, if you like, but I see several members of the committee making the calculation, and I am sure it will be correct.

Mr. Dalzell: Mr. Hill makes it $4.31.

Mr. Schwab: Now you must allow something for loss in that, because you do not get entirely all the iron, some passes over in dust, but it will be approximately $4.50. In that year it was from $4.50 to $5 a ton—$4.50 nearly—for the amount of ore to make a ton of pig iron. Now the coke

was the next thing. It cost us about $1 a ton to make our coke in that year at the ovens, and we had the coke carried to our furnaces for 75 cents, so that you will have to add $1.75 for fuel to make a ton of pig iron.

The Chairman: That is the total coke to make a ton of pig iron?

Mr. Schwab: It takes one ton of coke to make a ton of pig iron with 58 per cent. ore. Now I will go on. Then you take the limestone. The limestone in Pittsburgh was carried 14 miles at 10 cents a ton. Our cost of limestone was about 35 cents for each ton of pig iron. If you will add to that about $1.65, it will cover all the expenses outside of material for making a ton of pig iron, and you will have the approximate cost of a ton of pig iron that year.

The Chairman: What were those expenses; labor?

Mr. Schwab: Labor expense and small things about the works.

The Chairman: Steam?

Mr. Schwab: Well, there was no steam in making pig iron—there was some at that time, but very little. Now, that was the cost of making pig iron in that year. If you will recollect in that same year Pittsburgh made a great many conversion contracts for making billets—the cost of which is not widely different from the cost of making rails—at $5 per ton above the cost of pig iron. That $5 a ton included our profit in those years; and I am not stating anything that is not generally known. If you will add, therefore, about $3.75 more a ton to that, you will have the cost of making rails in Pittsburgh in that year—that is, the mill cost, absolutely. It was about $12. Now, that would vary from month to month——

Mr. Cockran: Do you mean allowing for depreciation and things of that kind?

Mr. Schwab: I do not; I mean absolutely the cost at the mill. I stated that at first. My estimate was made up from the mill.

Mr. Bonynge: You have given each of the items that make that up?

Mr. Schwab: I have, but I have not included depreciation, interest, or similar charges.

Mr. Bonynge: It simply includes those items that you have mentioned, giving the amount of each item?

Mr. Schwab: Certainly.

Mr. Cockran: That would be $5 for conversion?

Mr. Schwab: I can give you that in detail if you would like.

Mr. Cockran: But that $5 included the profit?

Mr. Schwab: We had about $1 to $1.25.

The Chairman: How much is the total cost of converting pig iron into rails?

Mr. Schwab: From $3.75 to $4 a ton, that year. Now, I want to tell you something else about that year. We have taken that part of the cost. We paid common labor that year $1 a day. The lowest salary I ever received myself up to that time was in that year. There never was a time when we had everything connected with the steel industry on such a low basis as in that year. Men were most anxious for work, and you could get lots of men at from $1 to $1.25 a day, who would do the work of two men of to-day. The number of men employed in the mills was only one-half what it is under similar conditions to-day. I only speak of some of the things that go to make up the rail rates in that year. If you will read Mr. Carnegie's article on rebates, you will see that we had rates in many instances one-third of what they are to-day.

Mr. Hill: Do not the same conditions exist in Great Britain in regard to labor, with which you made comparison at that time?

Mr. Schwab: Quite true, excepting this; at that time in Great Britain they had no mechanical appliances such as we had. Our great advantage in cost was because of our ability to mechanically produce things that they did manually.

Mr. Hill: Does that special advantage exist now?

Mr. Schwab: No, sir, it does not, for the reason that they have been able to adopt the things that we developed.

Mr. Hill: There is less necessity for a difference in the tariff now than there was then?

Mr. Schwab: I will come to that later, if I may go on, because I want to be very frank about the whole situation. I want to point out to you an apparent inconsistency which is not so inconsistent when you come to analyze it; in other words, let me put the question: "If I were writing that letter to-day, at what would I put the cost of steel rails?"

Mr. Dalzell: I was going to suggest that you tell us, in the same detail, what it would cost to-day.

Mr. Schwab: I would be very glad to do so. First of all, some seven or eight years ago—no, probably in 1901 or 1902, I am not sure—I testified before one of your committees in Washington that I placed a value on the ores of the United States Steel Corporation of $1 a ton in the ground.

Mr. Randell: In order that I may understand you, are you going to talk in an optimistic vein or a pessimistic vein?

Mr. Schwab: I will let you be the judge of that. As I say, I then testified that the ore was worth $1 a ton. It was then thought to be an optimistic estimate. I would call attention to the fact that since that time ores have only been sold at at least $1 a ton in the ground, and the lowest grade we have. I then spoke of 58 per cent. ores, the same kind we have been using. The United States Steel Corporation is leasing to-day from the Great Northern Railroad—Mr. Hill—ores, the minimum of which are 89 cents, and in three years will be above $1 a ton. So I want you to appreciate——

Mr. Underwood: Is that royalty alone?

Mr. Schwab: Yes, without any cost of taking it out of the mines. Now, I cannot say accurately—the Steel Corporation can testify to this—but I think from one-fifth to one-fourth of all the ores that it takes out this year will probably come from the properties on which it pays from 85 cents to $1 a ton royalty. That is first. Secondly, these mines that were formerly shoveling it—I have read in the newspapers some expert testimony on the cost of shoveling out Mesaba ores—but those ores were shoveled out at a cost of from 5 to 10 cents a ton. These mines are much deeper to-day and much more costly to operate, and I do not believe that the Mesaba ores on an average can be produced to-day, mined to-day, anywhere below 50 cents a ton, and I think the cost is between 50 and 60 cents. You can not buy Mesaba ores alone to make steel; you must use old ores, or hard ores, and the cost is nearly double that, varying from 75 cents to a $1 a ton.

Mr. Cockran: In what proportion?

Mr. Schwab: The best proportion is half and half. Please put these figures down, Mr. Hill. You have the cost of the ore in the ground at $1 per ton, as against our 10 and 15 cents I spoke of. If you will put the cost of mining now at 50 cents per ton; if you will put the cost of getting it to the lakes at 85 cents (I am giving you actual charges now); if you will put the cost of carrying it on the lakes at 70 cents, and the cost of unloading and taking it to Pittsburgh at $1, you will have the cost of the ores in Pittsburgh.

Mr. Hill: Has the freight rate from the mines to the lakes increased in these 10 years?

Mr. Schwab: It has.

Mr. Hill: How much?

Mr. Schwab: My best recollection is—I have not the exact figures—that it has increased from 60 to 85 cents. And it has increased on the lakes, not so much, but from 60 to 70 cents.

Mr. Hill: Then there is an increase of about $1 in the transportation?

Mr. Schwab: Yes.

Mr. Hill: And the United States Steel Corporation owns and controls the transportation?

Mr. Schwab: I cannot speak about that. You must ask it about that. Now, if you will divide that by 49, which is the average percentage of iron in the ore brought down last year, you will have the cost of the ore to make a ton of pig iron during these past several years.

Mr. Calderhead: Instead of 58?

Mr. Schwab: Instead of 58. We rejected ore up to that time that ran below 58, but now we take all of it that runs as high as 48. The other is not procurable; you cannot get it.

The Chairman: Go on, Mr. Schwab.

Mr. Schwab: I would like to have these figures.

Mr. Hill: I make it $8.26.

Mr. Schwab: Now, if you will add the usual losses in there you will find that that will be another 50 cents a ton. I allowed a lesser amount before.

Mr. Underwood: Your figures, then, show the cost of ore at the Pittsburgh furnace to make a ton of pig iron amounts to $8.50.

Mr. Longworth: And it was $4.50 in 1889?

Mr. Schwab: Yes, sir. I will give you further details if you desire it. Now, if you will come to the cost of coking coal, you will find that in those years coking coal in the Connellsville region—I am calling on my memory for this; Mr. Dalzell will probably know better than I—was about $600 an acre, and to-day it is worth $3000 an acre, the same coal. The cost of coke, therefore, made from Connellsville coal is proportionately greater. These are approximate figures, because it is hard to fix a definite value on those two things. Therefore, I know that coke may not be produced in the ovens to-day under $1.50 a ton; and I am not quite sure of this, but I think the freight rate to Pittsburgh is 85 cents, again, on coke. It is within 10 cents.

Mr. Hill: You mean to make a ton of iron?

Mr. Schwab: No, I mean that is for a ton of coke. Now, this is a thing I would also call your attention to. In the year I wrote that letter 1 ton of coke made a ton of pig iron, because the ores contained 58 per cent. of iron. Last year it took 1¼ tons of coke to make a ton of pig iron, because the ore only contained 49 per cent. of iron. Therefore, you must add one-fourth to the value——

Mr. Hill: That is 52½, which would make $2.62 for the coke.

Mr. Schwab: If you will add that to the $8.50 you will have $11.10, or something like that.

Mr. Hill: Then there is another item; there is labor.

Mr. Schwab: There is limestone. It costs 30 cents to

mine limestone and $1.20 to take it to Pittsburgh—$1.50. And you use about ½ ton of lime to a ton of pig, making 75 cents for your lime for each ton of pig iron. The reason that more lime is used now than that year is because the ores are leaner now. There is more waste material to flux away.

Mr. Hill: That makes $12.13 for your cost, eliminating your office force?

Mr. Schwab: No; there is another item to go in there yet; you have your labor and your conversion cost, which you can put now at about $1.25 or $1.30.

Mr. Crumpacker: What is the last item?

Mr. Schwab: The labor and charges other than material. That is about the cost of making pig iron in Pittsburgh to-day. And if you will add the general charges, the cost is about $14. I mean, to make a ton of pig iron in Pittsburgh.

Mr. Calderhead: What do you include in general charges?

Mr. Schwab: General administrative expenses and similar items.

Mr. Hill: The taxes and insurance?

Mr. Schwab: No, the works' taxes have been included in the other. Now, I would like to make one explanation. There are works and works. Some works can do a little better than other works. But what I have given you is the nearest average of one of the good works of Pittsburgh. My assertion can well be borne out. If you have examined the papers recently, you have seen that nearly all the furnaces in the valleys and about Pittsburgh have been shut down this year, because, as many of them told me, they could not afford to sell pig iron at $14 a ton. If you have noted, that has been about the market for pig. I do not believe we can convert pig iron into rails in our mill for less than $7.50 a ton, to-day.

The Chairman: Making a total cost of $21.50?

Mr. Schwab: About that, yes, sir.

Mr. Hill: You gave us the cost of conversion nine years ago as being $3.75.

Mr. Schwab: Quite right, but I am telling you why it is so much more to-day. Let us take the question of loss.

Mr. Hill: Your letter said your cost was going to decrease.

Mr. Schwab: Yes, my letter was very optimistic, and one sees things very different sometimes from what the realization is. Let me take the item of loss. I cannot give you the exact losses from memory, but they are approximately 10 per cent. Now, 10 per cent. on $8 is 80 cents loss; I mean when you convert iron into steel. You lose the silicon and the carbon, which go into the air; 80 cents loss on that. Now, there is nothing that enters into that that has not increased almost proportionately. The freights on everything you use to convert your pig iron into steel, like manganese, like refractories, like coke for melting, have gone up two-thirds in many instances.

Mr. Cockran: Did you say the freights?

Mr. Schwab: Yes; on all the materials for converting pig iron into steel. Labor has increased more than anything else.

Mr. Hill: In your statement just now, in making a ton of pig iron, you have made a reduction of 38 cents in labor cost.

Mr. Schwab: Quite so. Now I shall tell you why. The labor in making a ton of pig iron is not skilled labor at all. It is common labor. It has not changed, or at least changed very little, and, secondly, the appliances in making pig iron have changed very radically in that period of time, while the appliances for making rails have not changed materially.

The Chairman: What do you put down as the cost of labor in converting pig iron into steel?

Mr. Schwab: There are several methods, so I would have to give you the cost by each method.

Mr. Underwood: Will you give the cost by the Bessemer method first, and then follow that with the cost by the open hearth method?

Mr. Schwab: I will, if you like, but I would prefer not to. I will tell you the cost of one.

Mr. Cockran: If you will give us the figures for both we will make the comparison.

Mr. Schwab: I would prefer not to give you the figures for both.

Mr. Dalzell. How do you make your steel?

Mr. Schwab: By the open hearth method.

Mr. Dalzell: Will you give us the figures for that, then?

Mr. Schwab: Yes. The labor cost in the open hearth part of the process is about 85 cents a ton. In the blooming mill the cost is 40 or 50 cents, and the cost of the rails proper is from $1 to $1.25, depending on the section, drilling, and kind of rail. That is the actual labor at the mill. Of course, there is this to be borne in mind in analyzing the cost of a ton of rails: that there is nothing that enters into the cost of a ton of rails in its finality but raw material and labor.

Mr. Calderhead: What do you mean by the expression, "the kind of rail"?

Mr. Schwab: There are different sections and weights of rails. If a rail is 50 lb. to the yard, it costs more than a rail that runs 100 lb. to the yard.

Mr. Hill: You are speaking of the standard rail?

Mr. Schwab: Yes. Then, there are different kinds of specifications.

Mr. Calderhead: Please make that a little plainer.

Mr. Schwab: I thought I had made that plain. When I say different kinds of rail I mean different specifications and different patterns and different weights.

Mr. Fordney: It costs you more per ton to make rails that run 35 lb. to the yard than to make rails that run 90 lb.?

Mr. Schwab: Yes.

Mr. Calderhead: That is what I want.

Mr. Schwab: Yes. And then there are other things that also vary the cost.

The Chairman: Proceed with the remaining items of cost, to make up this $7.50.

Mr. Schwab: Against that cost you will have to go through the same calculation as before.

Mr. Underwood: You have labor at 85 cents, and other items here, which I figure out make a total of $3.65 for labor and losses.

Mr. Schwab: I will have to go further. It takes 100 tons of open hearth ingots to make 80 tons of rails. So to arrive at the $7.50 we have to go through a long calculation of percentages, that I think you will find pretty difficult.

Mr. Underwood: You have to add one-fifth of this labor cost, then?

Mr. Schwab: You will have to do the same thing with every item that enters into it.

Mr. Underwood: We have to add 45 cents there?

Mr. Schwab: No, 16 cents on labor.

Mr. Underwood: Oh, that would make $3.81.

Mr. Schwab: Now, the other costs are made up of an infinite number of things. There are the refractories, there is manganese, there are fluxes, there is coal for coke.

Mr. Hill: But a ton of iron does not make a ton of rails——

Mr. Schwab: That is an item of loss.

The Chairman: What is the manganese?

Mr. Schwab: The ferromanganese? That question depends on the specification of the rail. You can put it at 65 to 85 cents for ferromanganese. I do not want to give you these figures offhand, and then have you add them up and find that they do not add up exactly $7.50, but you will find that they will approximate that.

Mr. Hill: Does this include the profit of $5 a ton?

Mr. Schwab: No.

Mr. Hill: As in the previous statement?

Mr. Schwab: No.

Mr. Hill: You say you will file with the committee an itemized statement of that cost of the open hearth steel rail?

Mr. Schwab: Yes.

Mr. Underwood: If any bill that this Congress may pass goes out to the country and meets with the approval of the country it has to have facts behind it.

Mr. Schwab: I propose to give you the facts. You can do with the tariff, of course, as you see fit.

The Chairman: I wish you would give us the items, the cost of pig iron, what you allow for waste, the cost of labor, the cost of manganese, the cost of fuel, the cost for steel, the cost for ore——

Mr. Schwab: Do you want me to give them to you as you read them off?

The Chairman: No.

Mr. Schwab: I can give them now; I can give every item of cost that enters into it.

The Chairman: And repairs and maintenance and supplies and tools, miscellaneous and general expense; the general expenses of the factory and depreciation?

Mr. Schwab: You will have to give me that list.

The Chairman: I will give it to you.

Mr. Schwab: Now, I would like to state this. There have probably not been two months in the last two years in any two mills when rails have cost the same each month. So I will give you a good average cost, not the low cost or the high cost, but a good average cost.

Mr. Dalzell: I think it would be well to give us a statement as to the same things when you wrote that letter in 1899, giving us the items as applying to that time.

Mr. Schwab: You mean in writing?

Mr. Dalzell: Yes.

Mr. Schwab: I should be very glad to do so.

The Chairman: Then I would like the details of making pig iron.

Mr. Schwab: I have given those.

Mr. Crumpacker: Do you know about the cost of manufacturing pig iron and rails in detail in England and other foreign countries?

Mr. Schwab: Not as much in detail as I do about the cost in this country.

Mr. Crumpacker: Do you know any of the elements of difference in cost, and their significance?

Mr. Schwab: I am afraid you will have to be a little more specific.

Mr. Crumpacker: Well, do you know the comparative cost, as a general proposition, of making pig iron and rails in this country, and in foreign countries?

Mr. Schwab: To-day?

Mr. Crumpacker: Including these years.

Mr. Schwab: I will offer what I have already said as an explanation of that letter.

The Chairman: Now, you put the total cost of steel rails—have you got the figures there?

Mr. Hill: $20.93, I make it now.

Mr. Schwab: It ought to be in the neighborhood of $21.50. It will approximate $21.50.

The Chairman: Now, Mr. Schwab, how near is that to the average cost from 1902 down to the present time?

Mr. Schwab: I don't know, I would have to go through that, I couldn't give you that from memory. Suffice to say, that in every year since 1900, up to date—in every year—the average earnings of the employees of the Steel Corporation, while I was president, the average earnings of my own employees have increased each year; there has never been one year that the average has not increased. I have not been given the figures for this year yet——

The Chairman: Do you mean to say that the cost is higher for this year than for the average of the preceding years?

Mr. Schwab: I say I have not the figures for this year; this year has not ended yet. The real cost of making rails this year is the highest in 10 years, because we have had so few rails to make. In my opinion rail makers will not have made any money on rails this year. That is the reason it is difficult to make a comparison in a year like the present.

The Chairman: That will answer the question. Do you mean to say that the average cost has not exceeded $21.50 for the eight years preceding this year?

Mr. Schwab: For the eight years, I think it was less than that in 1900. I think the cost has gradually increased.

Mr. Calderhead: Why is that?

Mr. Schwab: Because everything that enters into the cost of rails has gradually increased in that time, and as I stated to you before, the average earnings of the workmen have increased every year since 1900. And so it is with freight.

The Chairman: Now, can you tell us the average price you have obtained for rails?

Mr. Schwab: It has been $28, always.

The Chairman: That has been the uniform price?

Mr. Schwab: Yes, sir.

The Chairman: For how long?

Mr. Schwab: I cannot recall.

The Chairman: For five or six years?

Mr. Schwab: More than that.

The Chairman: Ever since the organization of the United States Steel Corporation?

Mr. Schwab: Yes, and before. I cannot tell you the exact year.

Mr. Calderhead: Notwithstanding the increase in wages?

Mr. Schwab: Notwithstanding that.

Mr. Longworth: What was the price in 1899?

Mr. Schwab: I cannot recall, but I think $28.

Mr. Hill: You do not mean to say that the price of rails was $28 before the organization of the United States Steel Corporation?

Mr. Schwab: I do.

Mr. Hill: How long?

Mr. Schwab: I don't know.

Mr. Hill: Well, a year?

Mr. Schwab: Yes.

Mr. Hill: A year before?

Mr. Schwab: Have you the figures?

Mr. Hill: Yes. (Reading) In 1897, $18.75; in 1898, $17.62; in 1899, $28.12.

Mr. Schwab: That is right. But let me ask you to go back of that.

Mr. Hill: In 1896 the price was $28.

Mr. Schwab: That is the point I want to make. I will tell you the reason for that. In the years we made rails so cheaply we had, as you well know, a very great steel rail war between all the manufacturers and prices went the lowest in history.

Mr. Cockran: They were not sold at a loss during those years?

Mr. Schwab: I think they were by most manufacturers.

Mr. Hill: They would not be sold at a loss according to your figures.

Mr. Schwab: They were not sold at a loss by my company; I stated that in my letter to Mr. Frick.

Mr. Cockran: So those figures read by Mr. Hill showed a profit to your concern?

Mr. Schwab: A very small profit. When I say $12 cost, that was mill cost.

Mr. Cockran: That was in 1899?

Mr. Schwab: Yes, sir. Oh, we made a profit, I said we made a profit.

Mr. Cockran: You say a very small profit. Now, you sold them at how much—$18, was it, Mr. Hill, in 1899?

Mr. Hill: That was the generally quoted price. In 1899 they were $28.12. In 1898 they were $17.62.

Mr. Cockran: You charged $28, then, at the time they cost you $12, and you are charging $28 now, and now they cost you $21?

Mr. Schwab: That is right. That is absolutely correct. Now, I want to say something about that cost that Mr. Hill has of $17.62. It is probably the average selling price of rails that year. You want to know why we made a small profit. I said we—I mean the Carnegie Company. The most of the rails we sold that year were sold, delivered at Chicago at $17.12, and we had to pay the freight to Chicago, and didn't have much profit.

Mr. Cockran: But some?

Mr. Schwab: Yes; I said some profit.

Mr. Cockran: You got $17, and then you go to $28 without any corresponding increase at all in the cost of production. How do you account for that extraordinary rise?

Mr. Schwab: Well, it was time we were making some money.

Mr. Cockran: You had been making some before?

Mr. Schwab: Any manufacturing concern that goes into business, and does not expect to make from 20 to 25 per cent. had better not put its money in manufacturing.

Mr. Cockran: But here was over 100 per cent.?

Mr. Schwab: In that special year. Yes, quite right.

Mr. Cockran: What I want to get at is this: Whether the relation between the law of supply and demand was what fixed your price, or whether you fixed the price at just what you were able to get. I am speaking generally. Take that year. According to your figures, it actually cost about $12.50 to produce steel?

Mr. Schwab: Yes.

Mr. Cockran: And you charged $28 for it?

Mr. Schwab: Right.

Mr. Cockran: Now, that particular year there had been a combination of some steel manufacturers, had there not?

Mr. Schwab: Quite right.

Mr. Cockran: There was the Federal Steel Company, incorporated, I think?

Mr. Schwab: There was.

Mr. Cockran: And there was an American Steel & Wire Company, incorporated?

Mr. Schwab: Yes, sir.

Mr. Cockran: And that was the first year when there had been a consolidation of steel manufacturers?

Mr. Schwab: There had been no consolidation of steel rail manufacturers at that time.

Mr. Cockran: Did not the Federal Steel Company produce steel rails?

Mr. Schwab: Yes, sir.

Mr. Cockran: But they were themselves a combination of other companies. What I want to get at is this, and I will ask you to correct me if I am wrong. This jump in prices—I do not want to use any expression that is too strong——

Mr. Dalzell: Rise.

Mr. Cockran: Well, it was a little more than a rise; a rise in price is a gradual ascent; this was at least a little more than gradual; we will call it a jump. This jump from $17 to $28 a ton followed a consolidation of several minor companies into some larger companies, did it not?

Mr. Schwab: May I correct you?

Mr. Cockran: Certainly, if I am wrong.

Mr. Schwab: If you will look back several years before that I think you will find the price was $28 a ton.

Mr. Cockran: That was not my question.

Mr. Schwab: But you said it took place at that time. It did not take place at that time.

Mr. Cockran: I will have to repeat my question. Between the charge of $17 by the producers, or thereabouts, and $28, was there not a consolidation, or had there not been several consolidations of minor companies into larger companies, of several minor companies into a few larger ones?

Mr. Schwab: I cannot give you that from memory. I will tell you very frankly, without all those questions, that we had the steel war in the years already mentioned, and it was ruinous, and the manufacturers got together and agreed to restore the price of rails to their old basis.

Mr. Cockran: To end competition that was ruinous would be one thing, but to take advantage of that combination to increase their profit to 100 per cent., or such a matter, would be another thing. I take it that from the small profit that you say you were making under these prices of $17 and $18, you then made 100 per cent.?

Mr. Schwab: That is probably true.

Mr. Cockran: Then, to get back to my question: This jump, this leap, from a moderate profit to 100 per cent. was coincident with a consolidation of several minor companies into some larger companies?

Mr. Schwab: Your conclusions are right, but your premises are wrong.

Mr. Cockran: Why are my premises wrong?

Mr. Schwab: Because the price of $28 was established some years before there was any consolidation such as you speak of.

Mr. Cockran: Mr. Schwab, I can go back to a time when they were selling at $60 or $70, I think.

Mr. Schwab: That is true. Your conclusions are entirely correct.

Mr. Cockran: I am entirely correct as to that?

Mr. Schwab: Entirely correct.

Mr. McCall: When was the United States Steel Corporation formed?

Mr. Cockran: I am coming to that. After this combination of several minor companies into the few larger companies, another war, I think, was threatened, about 1901 or 1902, by the purchase of some land at a place called Conneaut, and an announcement of the Carnegie Company that it was going into the tubing business?

Mr. Schwab: You are conversant with that.

Mr. Cockran: Perhaps, somewhat so, but I want to get it accurately from you.

Mr. Schwab: The consolidation, as you term it, of the steel corporations, in about the year 1901 came about in this way: Mr. Morgan asked me if Mr. Carnegie wanted to sell his interests in iron and steel; that he then had large interests in the Federal and other companies. I approached Mr. Carnegie, and Mr. Carnegie said he would sell, and we sold our company to Mr. Morgan under the conditions with which you are all familiar. We knew the properties Mr. Morgan controlled, and upon which he was to give us a mortgage bond, and that is all there was to it.

Mr. Cockran: All there was to it, perhaps, so far as you were concerned, but a little more, I think, so far as the public was concerned. I said, Mr. Schwab, at least I asked you if there had not been an announcement by the Carnegie Company that it was going into the making of tubes?

Mr. Schwab: It was published in the newspapers that it was going into the making of tubes because we were.

Mr. Cockran: That was a fact?

Mr. Schwab: Yes.

Mr. Cockran: And you purchased the property at Conneaut for that purpose?

Mr. Schwab: It may have been so published.

Mr. Cockran: Following that, as I understand it, there was a consolidation of the Federal Company and the American Steel & Wire Company?

Mr. Schwab: All these companies, yes.

Mr. Cockran: And your company?

Mr. Schwab: Yes.

Mr. Cockran: Now, could you tell us about what the stocks of these companies were, what the value of their property was, for instance?

Mr. Schwab: I could not give it offhand.

Mr. Cockran: Well, about.

Mr. Schwab: I placed at that time the actual value of all these companies at approximately somewhat more than their total capitalization.

Mr. Cockran: Yes, that was the value of the property after consolidation.

Mr. Schwab: Yes.

Mr. Cockran: But you would not contend that these properties were worth as much when they were either actually or potentially competitors?

Mr. Schwab: I contend that the actual value of those properties to-day——

Mr. Cockran: I am not asking that.

Mr. Schwab: But at that time was quite equal to the capitalization of that time, and is worth very much more to-day than its capitalization.

Mr. Cockran: I am afraid you still have not answered.

Mr. Hill: What do you mean by capitalization—common and preferred stock both?

Mr. Schwab: And bonds, and all that.

Mr. Cockran: Yes, there is no doubt he believed that after the consolidation.

Mr. Schwab: I believed it before.

Mr. Cockran: Wait a minute. Before this consolidation these various companies owned all the property that the consolidated company owns now, or owned after the consolidation?

Mr. Schwab: Quite true.

Mr. Cockran: Take, for instance, your own company, you remember that?

Mr. Schwab: Yes, sir.

Mr. Cockran: That company was capitalized at how much?

Mr. Schwab: We were capitalized at that time, shortly before that, at $320,000,000.

Mr. Cockran: When was that capitalization made?

Mr. Schwab: I will have to speak from memory. I should say probably two years before the organization of the Steel Corporation. It was capitalized at $160,000,000 in bonds and $160,000,000 of stock.

Mr. Cockran: Do you remember at what rate that was put into the Steel Trust?

Mr. Schwab: I can tell you approximately.

Mr. Cockran: How many bonds?

Mr. Schwab: The bonds were exchanged for bonds at par, bond for bond. The par value of the stock was $1000 a share—it was not $100 certificates, but $1000 certificates—and the stock was bought at $1500 a share.

Mr. Cockran: Now, Mr. Schwab, how much money capital had actually been put into that company which was capitalized at the rate of $160,000,000?

Mr. Schwab: I could not tell you from memory, I don't know.

Mr. Cockran: Was there ever $100,000,000 put into it?

Mr. Schwab: Oh, yes. I cannot give you those figures offhand. I will tell you why I cannot. I do not know that any of us know. The Carnegie Company was a partnership; it was not a stock company, and when you ask how much real money was put in the Carnegie Company, I can only say that the earnings of the company were put in; none of us had any money to put in.

Mr. Cockran: That is it, then; now, we have got it.

Mr. Schwab: We developed the company——

Mr. Cockran: Exactly, so that whatever capital, whatever property was owned by this company, was the result of profits made in the company.

Mr. Schwab: Profit and increase in value of their properties.

Mr. Cockran: But that was profit?

Mr. Schwab: Certainly.

Mr. Cockran: So that practically the whole of that property was the result—I repeat it again—of profit made in the company, over and above the dividends that had been drawn out?

Mr. Schwab: Well, they were very small.

Mr. Cockran: I do not think Mr. Carnegie ever suffered for the need of anything during that time.

Mr. Schwab: Some of the rest of us perhaps did.

Mr. Cockran: He lived in comfort, and I hope you did also. Now, this entire property at that rate was, as you say, the result of the profits made in the business. Do you remember anything about the organization of the Federal Steel Company?

Mr. Schwab: Very little, but I may point out something else to you.

Mr. Cockran: I would be delighted.

Mr. Schwab: At the time we began leasing and acquiring ore properties, many years before the consolidation of the company, we acquired those ore properties at 10 cents a ton.

Mr. Cockran: Yes, sir.

Mr. Schwab: They gradually increased, and very rapidly increased each year, so that the 400 or 500 or 600 millions tons of ore we had represented a very large profit, as any other mining industry will that turns out well, and for which there is a large demand. Do not forget that in reckoning the profits.

Mr. Cockran: Not at all. Let me see if this is a correct statement of the history of the industry at that time. The rails and the products which had been selling at $17 or $18 a ton at a profit, after the consolidation of these several minor companies into the few larger companies, about 1899—I think it was in the year 1899—was followed by a jump in price to $28 a ton?

Mr. Schwab: A return in price, if you will permit me to correct you.

Mr. Cockran: Yes, you could say equally a return to the price of $60 or $70 a ton.

Mr. Schwab: That is right.

Mr. Cockran: So, if you do not mind, I will choose the word——

Mr. Schwab: I do mind very much.

Mr. Cockran: Let us compromise and put it both ways.

The Chairman: Let us get the fact.

Mr. Cockran then entered upon a long examination of the witness to ascertain the conditions under which the Carnegie Steel Company was taken into the United States Steel Corporation, but did not develop anything with which the readers of *The Iron Age* are not already familiar. Chairman Payne then resumed the questioning of Mr. Schwab as follows:

The Chairman: I want to ask you if you can tell us the price of the production of steel abroad.

Mr. Schwab: Merely in a general way.

The Chairman: You seemed to have a pretty clear idea about it in 1890.

Mr. Schwab: I try to have to-day, also.

The Chairman: What information or knowledge have you now on the subject?

Mr. Schwab: I could not give you the same detail that I did of iron manufacture. I can give you a good general estimate of the cost abroad. For example, I know that pig iron can be produced in different parts of Germany at from $9.50 to $12 a ton to-day, depending upon the location and the character of the pig.

The Chairman: Against $14 here?

Mr. Schwab: About $14 to $14.50 here. I think the freight is about $2.50 on an average.

Mr. Dalzell: You mean from Germany?

Mr. Schwab: Yes; that is, on the German pig iron.

Mr. Dalzell: You mean the freight from Germany is $2.50?

Mr. Schwab: Yes, sir; not much more than that.

The Chairman: The cost of converting into steel?

Mr. Schwab: The cost of converting that into rails in Germany is about the same as it is here.

The Chairman: So the difference in cost is the difference in the cost of the pig iron?

Mr. Schwab: The difference in cost is to-day about the difference in the cost of the pig iron.

The Chairman: That is in Germany. How about England?

Mr. Schwab: England is probably just a little cheaper, although it is not widely different. If they get their ore from Spain, they make it probably about the same as Germany. If they have local ores, perhaps they make it a little cheaper.

The Chairman: What is the main reason for the additional cost of the pig iron here?

Mr. Schwab: Raw materials and freights being higher.

The Chairman: Their iron is nearer their coal mines?

Mr. Schwab: Yes. They assemble their materials cheaper than we do.

The Chairman: I do not suppose they do it any cheaper than we can at Birmingham?

Mr. Schwab: No, we do it cheaper at Birmingham than they do in England.

The Chairman: You think the cost of pig iron in Birmingham would be less than the cost in England?

Mr. Schwab: I know it would be.

The Chairman: The cost of converting the steel is about the same?

Mr. Schwab: In Birmingham, it is about the same.

The Chairman: Can you give us any information on other branches of the steel industry? What do you say about billets?

Mr. Schwab: Billets and rails are nearly in the same class. It costs about $1 a ton more to make rails than to make billets; otherwise there is no difference.

The Chairman: How about structural steel?

Mr. Schwab: Structural steel costs about $3 a ton more to make—$3 to $4 more than rails. Steel plates, likewise, are in about the same class.

The Chairman: Tin plates, for instance?

Mr. Schwab: I could not give any information about them.

The Chairman: We have pretty full information about those. What else do you manufacture?

Mr. Schwab: You have covered the field pretty well unless you go into specialties. I mean by specialties, tool steel, forgings, axles, wheels, and minor branches of the steel industry. Other than that, you have covered the field pretty well. I cannot give much information about wire. I have been out of touch with that for some years.

The Chairman: Do you make wire rods?

Mr. Schwab: I do not.

Mr. Hill: I would like to ask a few questions. You were president of the United States Steel Corporation from 1901 to 1905?

Mr. Schwab: Yes, sir.

Mr. Hill: I want to ask you this question. With other things remaining equal, would the removal in part or in whole of the duty on steel rails affect the price?

Mr. Schwab: I want to answer that question because it is a very important one, a question to which I have given a great deal of thought, and is the gist of this whole thing. This is my opinion only. With every condition equal a steel rail can be made as cheaply in the United States as in any part of the world. The cost of making a steel rail depends entirely on two things, and only two things. The first is raw material and the second is labor, and nothing else enters into it. Give us the same conditions with reference to raw material and labor as in other parts of the world and rails will cost us the same and we will not need any tariff; but if you want to keep the transportation cost up, if you want to keep the price of supplies up, the refractories and the numerous things that go into steel, the main cost of which is labor, and you want to conserve your raw materials, which has been a much agitated subject recently, you will have to protect us with a tariff or put us in the same situation they are abroad.

Mr. Hill: I want to ask you simply as a business proposition—I asked you that question simply as a leader to another question. Is the price of steel rails fixed for the world in the United States?

Mr. Schwab: Not that I know of.

Mr. Hill: Is it not fixed by the International Rail Syndicate in London?

Mr. Schwab: If it is, I know nothing of it, and I know I manufacture rails and I am not a part of it. I mean I have never heard of it.

Mr. Hill: I know that, but I want to read a statement from our Consular Reports, and I would like your opinion or your knowledge in regard to it. It is an official report of the United States Consul, who is quoting from a book by J. Stephen James, on the steel industry, and he says finally: "The United States Steel Corporation, the German Steel Syndicate, and the International Rail Syndicate, which last has its headquarters in London, control the output of some 4,000,000 tons of rails annually in the United States, Germany and the United Kingdom." Have you any knowledge concerning that?

Mr. Schwab: I have heard of the two syndicates, the German Steel Syndicate and the International Rail Syndicate. They are well known all over Europe. As to the alliance between those two syndicates and the Steel Corporation, I know nothing, nor have I heard of anything.

Mr. Hill: In 1905, when you were president of the United States Steel Corporation, there were shipments of steel rails made from Baltimore as low as $18.60 a ton.

Mr. Schwab: Quite right.

Mr. Hill: Was there any profit to the company on that shipment?

Mr. Schwab: I cannot say, except that I know this, that in 1901, when I was president of the Steel Corporation, the conditions, as they existed in 1901, as I think I said before the Federal Industrial Commission, were such that the removal of the entire tariff would not hurt us. I want to point out distinctly and clearly, as I did in the explanation of my cost this morning, that the conditions between that time and the present time have very materially changed. If we want to go back to those conditions and put our raw materials in at those low figures and reduce our labor and other expenses as we did at that time, personally I would not care whether there was a tariff or not.

Mr. Hill: Since 1901 the uniform price of steel rails in the United States has, without any variableness or shadow of turning, been $28?

Mr. Schwab: Quite right. It was fixed, I think, along about—I cannot be sure about this—1895 or 1896 originally, but about that time the price of $28 per ton for steel rails was fixed by agreement of all the rail manufacturers in this country, or most of them. It went along until this great break came in 1897 or 1898—I am not sure of that year—and that continued for a couple of years. The price of rails was again fixed at $28 at that time, and it has never changed.

Mr. Hill: And all parties are selling at that price?

Mr. Schwab: Absolutely, so far as I know.

Mr. Hill: How does it come about that steel rails have for the last five years remained at $28 without any collusion with anybody else?

Mr. Schwab: I will tell you. Take the present times as the best illustration. There is not a manufacturer of rails in the United States to-day—I, for example, as a rail manufacturer, feel that if I were to vary that price of $28 for rails, which seems to have been recognized by all rail manufacturers as a fair price and giving a fair profit—if I were to vary that 10 cents a ton to-day, I would precipitate a steel war, to use such a word or expression, that would result in running my works without any profit. Everybody, by tacit and mutual understanding, feels the same way about that. I would not vary the price of my rails under any circumstances, not if I knew it was to get 100,000 tons in orders, for the reason that my competitor next door would put the price down $1 a ton, or half a dollar a ton even, and we would soon be in a position where we would be running without any profit at all.

Mr. Hill: You think absolute uniformity for the last few years in price of steel rails at $28 is without agreement?

Mr. Schwab: Absolutely.

Mr. Hill: Without collusion between the parties?

Mr. Schwab: Yes; I will say——

Mr. Hill (interrupting): Now in 1901, when you were president of the United States Steel Corporation, shiploads of rails were sent to Vladivastok and to the East for construction of the Trans-Siberian Railroad?

Mr. Schwab: Quite so.

Mr. Hill: Have you any objection to stating what the price was?

Mr. Schwab: No. If I knew I would very gladly state. I can probably get the information. My recollection is——

Mr. Hill: I want to say frankly the prices in Baltimore were on the leftover end of an Argentine contract from some previous years, an unfinished contract.

Mr. Schwab: I think the price was about $21 at Baltimore, was it not?

Mr. Hill: There were two shipments, one at $21.80 and one at $18.60.

Mr. Schwab: My best recollection was it was about $21. For years I exported great quantities of rails and similar things during that period at low prices without profit, or at least with very little profit, because it enabled me to make my home product just that much cheaper. That is an old argument, and I do not need to go into that, but it is a true one.

Mr. Hill: While you were president of the United States Steel Corporation, was there any agreement made with it that it would not ship abroad tin plate in excess of the amount of the previous years if a certain amount of black plate were brought from it by the Welsh manufacturers?

Mr. Schwab: That is not true.

Mr. Hill: You have heard that statement before, have you not?

Mr. Schwab: I never have.

Mr. Hill: There was no agreement between the United States Steel Corporation and any foreign concern during your term?

Mr. Schwab: No, sir.

Mr. Hill: Was there any international agreement with reference to wire nails?

Mr. Schwab: No agreement with reference to any manufactured article of the Steel Corporation while I was its president.

Mr. Hill: I am very glad you know that.

Mr. Underwood: The cost of making pig iron in Germany is considerably higher than it is in England, is it not?

Mr. Schwab: There is not so much difference.

Mr. Underwood: Is not the transportation charge to the furnace for ore and coke much higher than it is in England?

Mr. Schwab: No, sir.

Mr. Underwood: I thought the mines were not located so conveniently for manufacture.

Mr. Schwab: Those with which I am familiar, in Lorraine and in Luxemburg, have their coal and coke very close together. They make about the cheapest pig iron in that part of Germany of any. The materials to make pig iron are not widely separated in Germany.

Mr. Underwood: It is necessary for a good many of the plants in England to bring their ore from Spain, is it not?

Mr. Schwab: It is.

Mr. Underwood: Is that cost of transportation high?

Mr. Schwab: Not so high. Of course, the greater part of it is so transported. Large manufacturers at Cardiff and through that part of Wales bring their ore there cheaper.

Mr. Underwood: The price you gave us this morning of the cost of making pig iron and steel rails was the cost without any profit to the manufacturer?

Mr. Schwab: It was. I want to make one correction about that, that I think I neglected to state this morning, and that is that the cost which I gave you was the Bessemer steel rail.

Mr. Underwood: It was? Instead of the open hearth?

Mr. Schwab: Yes, sir.

Mr. Underwood: You stated this morning you did not want to make a comparison of the two, and I do not want you to do so unless you can, but if you can do so will you state whether the Bessemer rail costs more or less?

Mr. Schwab: The open hearth rail costs about $2 a ton more than the Bessemer rail costs.

Mr. Underwood: Would you mind describing to the committee the difference in the process of manufacture?

Mr. Schwab: You mean technically describing it?

Mr. Underwood: In as few words as you can.

Mr. Schwab: Raw pig iron contains about 3 to 4 per cent. of carbon and 1 to 2 per cent. of silicon. Steel contains only a trace of these two elements. In order to make steel it becomes necessary to remove the carbon and silicon. In the Bessemer converter they are removed by the introduction of air, which combines with the carbon and silicon in the pig iron and burns them out, producing steel. In the open hearth process the carbon and silicon in the pig iron are removed by contact with oxygen in iron ore. That is, liquid iron ore is brought into contact with liquid pig iron, and the oxygen combines with the carbon and silicon and produces steel. Those are the two processes, briefly described.

Mr. Underwood: In making the Bessemer steel, you put the molten iron into the converter and blow the air into it?

Mr. Schwab: Yes, sir.

Mr. Underwood: That process takes how long?

Mr. Schwab: For a single heat, 10 minutes.

Mr. Underwood: How long for a single heat in the open hearth process?

Mr. Schwab: Ten to 12 hours.

Mr. Underwood: Now, the duplex process?

Mr. Schwab: That is a combination of the two. They remove part of the silicon in the Bessemer converter, and part of it in the open hearth. That is the practice in Alabama.

Mr. Underwood: The duplex process would be more costly than the Bessemer and less costly than the open hearth?

Mr. Schwab: Yes, sir.

Mr. Underwood: How long would it take to boil it out in the duplex process?

Mr. Schwab: About half the time it would take in the open hearth process.

Mr. Underwood: So it is the length of time your furnaces are engaged in operating these different processes that makes the difference in cost?

Mr. Schwab: Not entirely. The cost of making pig iron in the Bessemer converter is more expensive than the cost of making pig iron for the basic. Pig for Bessemer must contain little or no phosphorus, while pig iron for the basic may——

Mr. Underwood (interrupting): The cheaper ores can be used for the basic process, and the more costly ores must be used for the Bessemer?

Mr. Schwab: That is quite true.

Mr. Underwood: Then the price that you gave of making pig iron in Germany and in England was the actual cost without counting in anything for the profit of the manufacturer?

Mr. Schwab: It was.

Mr. Underwood: You gave the freight rates from Germany to this country on pig iron at $2.50?

Mr. Schwab: That is approximate. It varies very much.

Mr. Underwood: Yes, I understand that. Approximately, what is it from England?

Mr. Schwab: I think it is about the same—$2 probably.

Mr. Underwood: On steel rails, what would it be?

Mr. Schwab: Very nearly the same—from $2 to $3. I have seen it much higher, and have seen it much less, but that is probably an average price.

Mr. Underwood: In regard to competition at present in steel rails or pig iron—I mean material competition—by the foreign manufacturers with this country, is there any?

Mr. Schwab: No, for this reason: As a rule, the buyers of rails in this country want to get their rails from the people who patronize their railroads. A railroad in this country would naturally rather pay $1 more for its rails from a man who manufactures on its line of railroad, and therefore there is not much competition in rails in this country. The competition in rails is in countries where we have a mutual field of competition—South America, Siberia or similar countries.

Mr. Underwood: Under ordinary circumstances, that same condition is true as to pig iron, is it not?

Mr. Schwab: There is not much consumption of pig iron there.

Mr. Underwood: In figuring the pig iron in this estimate, which you made, you figured on the molten pig iron carried to the steel plant.

Mr. Schwab: The difference in cost is very little. It is not over 10 cents a ton. It costs about 10 cents a ton—from 10 to 15 cents—to cast molten pig iron into cold pig.

Mr. Underwood: Does that include removing it from the stock house?

Mr. Schwab: From the furnace to the casting. It is all done by machinery, and the loading of it in the cars after cast will be covered by the 10 or 15 cents a ton.

Mr. Underwood: In the manufacture of iron bars, as compared with steel bars, is it cheaper or more expensive to produce steel bars than iron bars?

Mr. Schwab: If you were to produce iron bars from pig iron, it would cost more than steel bars would cost, but iron bars are not produced in that way. Iron bars are produced to-day by the purchase of old iron scrap that has accumulated over many years of iron manufacture, that has no real use for market, and so they are able to produce iron bars somewhat cheaper to-day than they can produce steel bars.

Mr. Underwood: There is another question I want to ask you. I notice that in statistics of the world's production of pig iron, the production in Germany has developed much more rapidly than it has in Great Britain.

Mr. Schwab: Yes, sir.

Mr. Underwood: I believe in 1907 the world's production was about 61,000,000 tons, Great Britain producing about 11,000,000 tons, and Germany about 13,000,000 tons, whereas in 1900 Great Britain produced 8,000,000 tons and Germany 8,000,000 tons. Is the cost of production in Germany any greater than in Great Britain, so that the cost has brought about the development of the German production so much in excess of the British production?

Mr. Schwab: That is a difficult question to answer, but I will give you my view on it very generally. The Germans have made the greatest advance in economic metallurgy of any nation in this world during the last five years. They have utilized their by-products to a greater extent than any other manufacturing nation. Not only that, but they have developed their mechanical appliances with reference to manufacturing to an extent that no other nation has, and they have developed their quality to a greater extent than any other nation during these past five years. In other words, manufacturing in Germany five years ago seems to have had a complete renaissance, and they have advanced very much more rapidly than any other nation, for the reasons I have given. For two reasons, the first, the very excellent technical education of their metallurgical engineers in Germany; the second, and most important, the labor conditions in Germany as compared with the conditions in England. I think the labor conditions in England are the worst of any of the great manufacturing countries of the world.

Mr. Cockran: Worse in what way?

Mr. Schwab: That is a delicate subject to talk about. I would rather say nothing about it. I mean for the manufacturer, making cost higher, difficulty of getting production per man, and the difficulty of introducing modern machinery.

Mr. Underwood: I want to ask you if during the last decade the German Government has not given to manufacturers of iron and steel products a bounty?

Mr. Schwab: I cannot speak of that. But I do know that no government in the world has given its manufacturers in iron and steel the same encouragement and advantages that Germany has given.

Mr. Underwood: You are not familiar with that bounty?

Mr. Schwab: I cannot speak of the bounty. I am not sufficiently familiar to know what it is.

Mr. Underwood: The reason I asked the question was to find out if the large exportation that has come from Germany and gone into competition with England was not to a large extent due to the bounty given by the German Government.

Mr. Schwab: The advance in German steel manufacture in the past few years has been on account of the untiring effort of the German Government in every way, in its diplomatic and consular service through the world, to push and

promote German manufactures. Wherever you go, to South America or any part of the world, you will find the whole country and its consular service, and every part of it devoted to the sale of German steel goods, and interesting themselves in it.

Mr. Underwood: If we were to write a minimum and maximum tariff here, and not give the minimum rate to any country that gave a bounty for the development of its products, would not that relieve us to a great extent from German competition?

Mr. Schwab: I do not know about that. I would have to think about that.

Mr. Underwood: If you come to a conclusion about it, I will be glad to have it.

Mr. Schwab: That is a new thought, and I have not considered it at all.

Mr. Underwood: I will be glad if you will consider that question, because I think it is a material one.

Mr. Schwab: It is, indeed.

Mr. Underwood: Now, I want to ask you about the sale of your steel rails abroad. You sold a large amount abroad?

Mr. Schwab: Not a very large amount; no. I cannot give the figures offhand. You no doubt have the figures here. They are a matter of record, but it is not a very large quantity. When I say abroad, I mean all countries other than the United States.

Mr. Underwood: Have you gone into the European countries with rails?

Mr. Schwab: No; very few, at least.

Mr. Underwood: It has been in the Orient?

Mr. Schwab: Countries open to competition; yes. The tariff of Germany and France and Austria is so high we cannot ship the products in there.

Mr. Underwood: The reason you cannot get into French markets is that France applies her maximum rate against American iron and steel products?

Mr. Schwab: Yes, sir.

Mr. Underwood: And she gives Belgium and England her minimum rate?

Mr. Schwab: Yes; that may be.

Mr. Underwood: If we had a maximum and minimum tariff bill, by which we could get the French minimum rate, would not there be an opportunity——

Mr. Schwab (interrupting): There might be. That is a new thought for me, I must confess, and I have not considered it at all.

Mr. Underwood: There is one other question I desire to ask. In answer to the chairman, you stated there were some other products of iron and steel which you made besides steel rails. Will you enumerate those and give the cost of the manufacture of those?

Mr. Schwab: One of the most important is steel plates. The cost of plates and the cost of all steel structural shapes —that is, rolled products—in round figures is about $3 a ton above the cost of rails. There is a great variety of specifications and qualifications with reference to these special grades of steel that make their cost very considerable, but I am taking the common standard shapes. I mean by that columns for buildings, girders for buildings, or plates for ships, or any similar line, and you can reckon that as a general thing the cost is about $3 to $4 a ton above that of rails.

Mr. Underwood: You also make car wheels? What is the cost of those?

Mr. Schwab: That is a great variety of cost. Common cast iron wheels are made at very low cost, while the steel rolled wheels are three times the cost of cast iron wheels. If you will specify a specific kind I can give you the cost.

Mr. Underwood: What is the difference between this country and your foreign competitors—the English manufacturers—on those items?

Mr. Schwab: I cannot give it; I do not know.

Mr. Underwood: You are not familiar with that?

Mr. Schwab: No, sir; I am not sufficiently familiar with that. The important factors are those I have given you—structural shapes of all sorts, bars and rails. Steel wire I am not now sufficiently familiar with to give any data.

Mr. Underwood: Could this committee, if it sees proper to reduce the duty on steel rails and pig iron, taking the figures you have given to base its reductions on, safely make a similar reduction on the other products?

Mr. Schwab: Yes, sir. My view of that is this: You can take the tariff off altogether if you want to, and we will be able to compete anywhere, but we have to put the conditions in a similar form. We have to put labor on a similar basis. If you will go into the detailed amount of labor entering into the cost of making steel, you will find it is practically everything but the cost of the raw material in the ground. Reduce those labor items along the line—I mean the labor of all the people who furnish firebricks and refractories and supplies and waste and oil and coal and everything that goes into the steel—and you will be able to put us on a basis with our natural resources, putting them in at the same price as anybody's else, to compete with the world free, and it will make a very radical and decided change in everything pertaining to the manufacture in America.

Mr. Hill: Right on that very point, is the tariff fairly balanced between pig iron and steel rails? With $4 a ton on pig iron, is not the remaining $3.84 an excessive tariff on the transferring of that into rails?

Mr. Schwab: I could not answer that off-hand. I would have to figure that a little.

Mr. Hill: Will you kindly look over the iron and steel schedule, and point out to the committee in writing any unbalanced items, in your judgment?

Mr. Schwab: The only ones with which I am familiar are the ones I have mentioned, and those are the important items which I have mentioned—structural items, rails and so forth. I think the differential there is all right.

Mr. Hill: You think it is fairly balanced?

Mr. Schwab: I do think it is fairly balanced between those two things, considering the cost of making them.

Mr. Underwood: Let me call your attention to the question of balancing these two duties. As you stated a while ago, almost this entire proposition is dependent on the labor cost, except the cost of the raw material?

Mr. Schwab: Yes, sir.

Mr. Underwood: This morning you stated the cost of pig iron was $13.43?

Mr. Schwab: Yes, under present conditions.

Mr. Underwood: Added to that is $7.70 for converting into steel rails, amounting to about $21.50?

Mr. Schwab: Quite right.

Mr. Underwood: Now, the duty on pig iron is $4.

Mr. Schwab: Yes.

Mr. Underwood: Four dollars stands as a protective tariff to protect $13.43 worth of cost of product of the pig iron. The duty on steel rails is $7.84, or nearly double the protective duty on pig iron, and yet the labor cost or the cost of manufacturing the steel above the pig iron is only $7.50, or almost half as much.

Mr. Schwab: But the cost from the pig iron to the rails is all labor.

Mr. Underwood: So it is from the ore.

Mr. Schwab: No, the cost of making pig iron is made up very largely of the raw materials in the ground. If you will remember it, I put ore at $1 a ton, and inasmuch as it takes 3 tons of ore to make 1 ton of steel rails, that cuts a very material figure in the cost of rails.

Mr. Underwood: That is true. It would then make the labor cost of pig iron stand in the relative proportion of two to one.

Mr. Schwab: I would have to figure that. This I do know, however, that the cost of putting pig iron into rails is practically all labor in one form or another. That is, you may say I charge so much here for material, for repairs and so forth, but analyzing the materials or repairs back to their finality, you will find it is all labor, and so every item that enters into the cost of the rails is nothing but labor after you get the raw material.

Mr. Underwood: There is another proposition you have left out of your statement. If a man has his money invested in any concern he should sell his product at a reasonable profit?

Mr. Schwab: Yes, sir.

Mr. Underwood: What do you think is a fair proposition to add to the cost of pig iron and steel rails for a fair profit to the manufacturer, considering the amount of his investment.

Mr. Schwab: I will tell you: I believe that in the manufacture of steel, unless a man can see a profit of 20 or 25 per cent. a year, he had better keep out, for the reason that changes in the methods have necessitated such frequent and radical changes in plants that the charge-off each year for changes and depreciation is very much greater than people not in the business possibly dream of. I could state to you many illustrations of that. During my superintendence of the Braddock Works, in five years I rebuilt the converting department three times. Therefore, the ordinary charge of 5 per cent. for depreciation will not nearly cover the investment. I think that in any manufacturing, you ought to have at least 25 per cent. I think where you consider steel from the ore down, where you mine the ore and manufacture the coke, and do all those things incidental to the manufacture of steel, 25 per cent. is not a sufficient profit.

Mr. Underwood: Twenty-five per cent. there would include the profit on the mining of the ore, the production of the coke, and making it into pig iron and the production of steel?

Mr. Schwab: I mean if I bought my ores to start to make steel, I ought to have 25 per cent. profit on it, but I do not think manufacturing will pay that, and I think you will find it will be the experience of people long in the art that it should not pay much less than that.

Mr. Underwood: I think you are right, but in adjusting the profits we have to consider other people in the ore business who are entitled to a profit, and we have to consider those profits in fixing the rate.

Mr. Schwab: I understand that.

Mr. Underwood: But 25 per cent.—I do not know what the steel plant would cost.

Mr. Schwab: They grow more costly each year.

Mr. Underwood: If you can say what it would cost to erect a plant to make steel rails at a profit, and then tell us how much a ton should be added for profit, we would like to have it.

Mr. Schwab: I will give you an illustration of that: The latest plant built in the United States I have just built at Bethlehem. We produce only 500 tons of rails a day, and about 1000 tons of structural steel in this plant. That is a total production of 1500 tons of steel a day. The cost of the bare plant—that is not the blast furnace, but from the pig iron to the finished product—was about $15,500,000. That included no working capital. We have spent on that plant, in working capital and plant, approximately, $21,000,000.

Mr. Underwood: Now, with reference to that plant, which is a modern plant and up to date, I want you to state if you can how much should be added to a ton of steel to give you a 25 per cent. profit on the whole process?

Mr. Schwab: I would have to figure that. Let us take the cost of that plant at $21,000,000. Twenty-five per cent. of the cost of that plant is approximately $4,000,000. If you divide that by about 500,000 tons a year of steel output, which is about the output of that plant in rails and structural steel, it amounts to $8 a ton. I would like to call attention to one thing more. This is hardly a fair computation, inasmuch as it was a hasty one. I took no profit on the blast furnace for this plant, which we already had.

Mr. Underwood: Take a similar case and put in your mind, if you can, a modern up to date blast furnace, fairly situated in the country to do business, and estimate the cost of building and construction of that blast furnace, and then see what should be added to a ton of pig iron to produce the amount of profit necessary.

Mr. Schwab: The situation is somewhat different in pig iron for this reason, that the frequent renewals or changing of plant are not so necessary as in the making of steel, because blast furnaces have not changed a great deal, as you well know. I will do the best I can. I should say $2 a ton, in round figures. That is the way I have it figured, and you will pardon me if I have made a mistake. A modern blast furnace costs about $1,500,000. That furnace will produce about 140,000 tons in a year. Twenty-five per cent. on the cost of that furnace would be $300,000 a year, which, divided by 140,000, is something over $2. That is probably low, for the reason that you cannot isolate a blast furnace. It is not fair to take a single item like a blast furnace, to tell what the cost of that individual output ought to be.

Mr. Underwood: The reason you said the profit ought to be 25 per cent. on the finished product was because you recognized that the man who mined the ore was entitled to a profit, the man who mined the coal was entitled to a profit, and the man who was producing the coke was entitled to a profit, and therefore——

Mr. Schwab (interrupting): If you will take my cost as given this morning, I think you will find there is some profit allowed in that in this particular. I put ore at $1 a ton.

Mr. Underwood: That is what you claim to be a royalty?

Mr. Schwab: I said for people who own ore it was worth $1 a ton to mine it. It amounts to the same thing. If you buy coke at a certain price, that includes the cost of the coal at the mine.

Mr. Underwood: There was no profit in your statement outside of the cost of the raw material?

Mr. Schwab: No.

Mr. Underwood: Did you estimate, or will you estimate, if you can, the difference in the labor cost in a ton of pig iron as between the production in this country and England and Germany?

Mr. Schwab: There is not a great deal of difference in the labor cost in the two countries, but our investment in a plant and machinery to make a ton is very much greater than theirs.

Mr. Underwood: I see that.

Mr. Schwab: But the actual difference in labor between the two countries is not very much. The difference in the actual cost per ton to-day is not very marked.

Mr. Underwood: The American manufacturer has not lost anything by the increase in the cost of his plant? He has a more modern plant?

Mr. Schwab: No; the manufacturer gets cheaper labor. He pays higher to-day for his labor, but does with less men by reason of the increased cost of plant. That is the difference. We operate a furnace with probably one-half the number of men, but pay them twice as much.

Mr. Underwood: You have a blast furnace that will produce 500 tons a day?

Mr. Schwab: That is a good modern furnace.

Mr. Underwood: What would be the difference in cost in building or construction of that plant here and in England?

Mr. Schwab: I would have to guess at that. I can tell what it is in this country.

Mr. Underwood: About what is the difference?

Mr. Schwab: Our cost is about $1,500,000, and I should say theirs is about $500,000.

Mr. Underwood: They build their plant for one-third what you do?

Mr. Schwab: Yes, sir.

Mr. Underwood: What is the difference in Germany relatively?

Mr. Schwab: Germany is rapidly adopting the same methods and blast furnace practices that we are, with reference to economies in handling the material, but they have gone much further than we have in the introduction of the use of their waste gases. Germany was the first country to use waste gases for the development of power, which makes a very large saving in the cost of pig iron. We are rapidly adopting it, but, to tell the truth, we are following Germany in that respect.

Mr. Clark: Have you ever been to Spain?

Mr. Schwab: I have.

Mr. Clark: Is it true or not true that Spanish iron mines are situated right on the sea?

Mr. Schwab: Not exactly on the sea. They have to transport their iron by rail to the water.

Mr. Clark: The reason I ask that is there was one man here who testified they were right jam up against the sea.

Mr. Schwab: That is not exactly correct. There may be some mines on the sea that I do not know of.

Mr. Clark: You are still selling steel rails at home at $28 a ton?

Mr. Schwab: We are selling at $30. Ours are open hearth rails.

Mr. Clark: They cost you $21 and something?

Mr. Schwab: No, Bessemer rails cost $21.

Mr. Clark: How much do these cost?

Mr. Schwab: Well, say $23.50.

Mr. Clark: How much do you sell them for abroad?

Mr. Schwab: We do not sell any abroad. We have sold a few, yes; I sold some to Panama, and some to Mexico, I think, but very few.

Mr. Clark: How much are American Bessemer rails selling for here at home?

Mr. Schwab: $28.

Mr. Clark: How much do they sell for abroad?

Mr. Schwab: I cannot tell you exactly. I do not know. I can tell you about what they are selling for. I should suppose they are selling abroad for between $26.50 and $27.

Mr. Clark: Do you know what the difference was in home consumption and foreign consumption last year? I mean this year and last year—in 1907, what was the difference between the home price of Bessemer rails and the export price?

Mr. Schwab: I do not know. I think the price last year was about the same as it is this year.

Mr. Clark: Do you know of your own knowledge what is the greatest discrepancy there ever was between the home price of steel rails and the foreign price?

Mr. Schwab: I should say, probably $10; I am not sure of that, however; that is merely a guess.

Mr. Clark: It is a habitual process to sell them cheaper abroad, is it not?

Mr. Schwab: Yes, sir, and a very wise process.

Mr. Clark: I am not asking whether it is wise or unwise. I am asking for a fact.

Mr. Schwab: I beg your pardon; I offered that information gratuitously.

Mr. Clark: I do not want to go into the realms of speculation. I want to stick to facts. The reason I asked that last question was that an independent manufacturer here testified that one year his recollection was that the difference was $6.80, I think. When you say you ought to have 25 per cent. profit, do you mean that the gross profit ought to be 25 per cent.?

Mr. Schwab: Certainly. It depends on what you mean as between gross and net profits, however.

Mr. Clark: By net profit, I mean your profit after you have subtracted from the amount of money that you get for the article, every element of cost, interest, depreciation, and everything counted off.

Mr. Schwab: Then I do not mean that.

Mr. Clark: You do not mean net profit?

Mr. Schwab: No, sir; I do not. I mean we should have 25 per cent. manufacturing profit to enable us to charge off 5 or 6 or 8 per cent. a year for plant and so forth.

Mr. Clark: There has been a great deal of talk first and last about reasonable profits. Take it on a net profit, after all sorts of costs and expenses and everything else that enters into the cost are taken out, what profit do you think you ought to get?

Mr. Schwab: 15 to 20 per cent.

Mr. Clark: Net profit?

Mr. Schwab: Yes, sir; I certainly do. I do not think you would succeed in manufacturing unless you do.

Mr. Clark: I am talking about net profit. Clear, clean velvet, as the boys say.

Mr. Schwab: There is an unfortunate thing about the steel business, that although we get a good deal of profit we do not get much "velvet."

Mr. Clark: If you put a dollar's worth of stuff back into the plant, you are just as well off as if you put it in your pocket?

Mr. Schwab: No; I would make a very liberal reduction

for cash. If you want to buy my plant I will make you a very liberal discount for cash.

Mr. Clark: I do not think I will tackle that to-day. What I am trying to get at is what this means as a reasonable profit. You say 15 or 20 per cent.?

Mr. Schwab: That is my view of it.

Mr. Clark: Just from your general information, I suppose you have a good deal of it one way or another, from your very clear statements in your testimony——

Mr. Schwab (interrupting): Thank you, sir.

Mr. Clark: Do you not think that is three or four times as much as the profit on the average business in the nation, outside of the steel business? I am talking about the whole business of the United States, manufacturing and everything else.

Mr. Schwab: Banking and manufacturing are two very different things. If you will say manufacturing, it is my opinion that in the general manufacturing business that is not an exorbitant profit.

Mr. Clark: I will ask you another question in connection with that. Is it your opinion from your general and large observation that the average manufacturer in the United States is making 15 to 20 per cent. net?

Mr. Schwab: To-day he is not making anything.

Mr. Clark: I am not talking about this year. Take the last 11 years as a business period, since the revival of business—that is a fair phrase to use—what would you say about the average profit of manufacturing in this country, not counting 1908 especially, but taking that in connection with 1897, and every year down to the present time? How much have they made, would you say?

Mr. Schwab: I should say from 10 to 15 per cent.

Mr. Clark: I am glad to hear that. Nearly every one has come in here and testified—not testified under oath, because we only began to swear them here a day or two ago—solemnly asserted that none of them have made over 3 or 4 per cent., although we did finally persuade one man to testify or state that he made 15 per cent. on gypsum.

Mr. Schwab: I do not think we ought to take the average manufacturer as the criterion of what this country can do and what the profits ought to be. If we want to compete with foreign manufacturers in foreign countries, we must do so, not with the average manufacturers, but with our best manufacturers.

Mr. Clark: But if the average manufacturer makes 15 or 20 per cent., with all the slovenliness and things of that kind that are attached to some people's manufacturing business——

Mr. Schwab: You do not quote me correctly, quite. I said from 10 to 15 per cent.

Mr. Clark: Well, take 10 to 15 per cent. If the average manufacturer, with all the drawbacks of a large number of people being mixed up, incapables and all, have made from 10 to 15 per cent., then an expert business man——

Mr. Schwab: He ought to make 25 per cent. or more.

Mr. Clark: He would make it?

Mr. Schwab: He ought to.

Mr. Gaines: Did I understand you to say you could retain the American market without any duty, but in order to do so, you would have to reduce the basis of the cost?

Mr. Schwab: Put it in the same condition they have it abroad?

Mr. Gaines: If you reduce the cost of production here, what item other than labor enters largely into the cost of production?

Mr. Schwab: Raw material only.

Mr. Gaines: What I would like to ask you is, does not labor enter more largely into the cost of production than anything else?

Mr. Schwab: Of course. When you take out the cost of your raw materials, there is no other cost left but the labor.

Mr. Gaines: So if the duty were removed from your product in order for you to retain the American market and compete with foreign manufacturers, the cost of production must be reduced?

Mr. Schwab: Absolutely. There is nothing else to it.

Mr. Gaines: Labor being the largest item of cost, it would be the first thing to be considered?

Mr. Schwab: Yes, sir. That does not mean labor in the steel works only. It means the railroads must reduce their freight and consequently their labor. Every man who furnished the steel works any supplies, whether he be a brickmaker or anything else, must be reduced also. You must get all your supplies cheaper, and every man who furnishes you those supplies must get his labor cheaper.

Mr. McCall: You mean we are to have an exact reproduction of the situation existing abroad?

Mr. Schwab: To compete with them we must have similar conditions.

Mr. Cockran: Concerning this question of reasonable profit, you have fixed that in your answer to Mr. Clark at between 15 and 20 per cent. as the amount a steel company should be allowed to earn, saying that is a reasonable profit.

Mr. Schwab: Yes, sir.

Mr. Cockran: That means 15 or 20 per cent. available for distribution to the stockholders; you do not include in that the salaries and expenses that are paid to officers and managers? You mean 15 or 20 per cent. net after all expenses are paid?

Mr. Schwab: Fifteen or 20 per cent. net profit.

Mr. Cockran: So if a man is successful, as you yourself have been——

Mr. Schwab (interrupting): I doubt it.

Mr. Cockran: You have been finally in your line a success—if a man can prove himself worth to a company $400,000 or $500,000 a year, or even $1,000,000 a year, on that basis of computation that would be taken out as a charge?

Mr. Schwab: No, I put that in as a cost.

Mr. Cockran: Fifteen or 20 per cent. would be aside from that?

Mr. Schwab: Quite so.

Mr. Cockran: When you discuss the question of profits for the company, you mean profits over and above all that can be paid by way of compensation or reward to any individual, who contributes to the success of the company?

Mr. Schwab: That is part of the cost, certainly.

Mr. Cockran: I do not ask anything as to what those amounts are, because I suppose that is a matter of confidential information.

Mr. Schwab: I do not know to what you refer.

Mr. Cockran: I mean the amount paid, for instance, by the United States Steel Corporation.

Mr. Schwab: I do not know.

Mr. Cockran: You said that it is selling abroad cheaper than here?

Mr. Schwab: Yes, sir.

Mr. Cockran: You said that is a very wise process?

Mr. Schwab: Quite.

Mr. Cockran: Could you explain the wisdom of it to the victims of it as well as to the beneficiaries of it? From the point of view of the American consumer, where does the wisdom of it come in?

Mr. Schwab: I am not thinking of the consumer. I am thinking of the manufacturer. (Laughter.) I presume there is no argument there.

Mr. Cockran: There is no argument there. The more you get the merrier.

Mr. Schwab: I have said it was a wise provision for the manufacturer. You cannot let a steel plant stand idle. The fires in your furnaces and the heat costs go on, whether you are making steel or not.

Mr. Cockran: You said, as a matter of fact, that there are different rates charged for your products abroad, and you charge less abroad than you charge at home.

Mr. Schwab: We usually charge abroad what we can get.

Mr. Cockran: You do that at home, do you not?

Mr. Schwab: Yes, of course.

Mr. Cockran: You cannot, of course, put a pistol to a man's head and take all he has.

Mr. Schwab: You can, in some instances, yes.

Mr. Cockran: I mean to say you sell abroad for all that you can get. As a matter of fact, you do sell abroad for less than you obtain here?

Mr. Schwab: As a rule, that is true.

Mr. Bonynge: What percentage of steel rails produced in the United States is sold abroad?

Mr. Schwab: In years gone by, it was a very small percentage. I should say from 5 to 7 per cent. This year, I think, it will be larger, because our home consumption has been very small.

Mr. Bonynge: About how much?

Mr. Schwab: I should not be surprised if it ran as high as 20 per cent. this year. The reason for that is because we have no market at home, and we have been driven abroad to get something to do.

Mr. Cockran: Where and in what parts of the world are those sales made this year?

Mr. Schwab: Wherever there is a competitive field where we all pay equal tariffs or no tariffs at all, like South America, for example, or Japan or China.

Mr. Cockran: Have you ever gotten into Canada, where there is a differential tariff in favor of England?

Mr. Schwab: There have been no rails sold in Canada since that differential tariff—none that I know of.

Mr. Cockran: Do you not think that the consumers of this country would be entitled to the most favored treatment as against foreigners?

Mr. Schwab: I will tell you something about that. We have made a point about the price of steel rails. I have always said to the railroads, "We will make the price of steel rails anything you say if you will proportionately reduce your freight rates to us." In other words, the cost to the steel manufacturer for manufacturing his rails and other steel products that he pays in freight is very nearly 30 per cent. of his total cost.

Mr. Cockran: I understand that.

Mr. Schwab: While the cost to the railroad of their steel rails is a very small percentage of their cost. A reduction in the price of steel rails to a railroad would be a very trivial amount compared to a similar reduction in their rates to us. The consequence is, so far as I know, railroads do not want the price of steel rails reduced.

Mr. Cockran: The railroads do not?

Mr. Schwab: No, sir, they do not. The same is true of all kinds of other articles of steel to the consumer. Let me say something about structural steel, in which there is a uniform price throughout the United States and has been for some years. The buyers of structural steel, whether they be large or small, whether they have great advantages by reason of shop or otherwise, have no advantage to-day in the purchase of structural steel, and the small consumers want to see that price maintained steadily all the time. For example, I had within a few months a call from seven of the largest users of structural steel in America, and they all asked that I use my influence to keep the price unchanged. One of the great advantages of the United States Steel Corporation during the great period of prosperity, and the fact that this steel business was in the hands of comparatively few people, has been the fact that, although it could have had $10 or $15 or $20 per ton more for its steel than it got, it did not raise the price, nor has it lowered the price during this depression. The result is that whether they be railroads or whether they be small consumers of structural steel, they feel better satisfied, and like the present condition much better than when we had violent fluctuations in the market.

Mr. Cockran: There is no question at all that a steady price would be better than uneven prices, but surely it does not folllow that they also want it not only steady, but high?

Mr. Schwab: No, but I do not think that the prices of steel are unreasonable.

Mr. Cockran: You would not be expected to think that.

Mr. Schwab: No, I do not think they are high enough, personally.

Mr. Cockran: Oh, no; I understand that.

Mr. Schwab: I mean by reason of advances that have been made in everything entering into the cost of steel—railroad freights have gone up and everything has gone up. Wages have advanced steadily every year since 1900, but steel has not advanced.

Mr. Cockran: But you started in in 1899 with a profit of 100 per cent. on your showing?

Mr. Schwab: That was about right.

Mr. Cockran: Yes, that was about right; I understand that perfectly. We have your view of what is right. You have said that the steel companies could have obtained easily $10 or $20 additional.

Mr. Schwab: No, I said dependent on the market.

Mr. Cockran: Surely you did not mean that if they undertook to exact such a price as that they would not have discouraged the use of steel?

Mr. Schwab: They probably would, but other and independent manufacturers did get it.

Mr. Cockran: You say other independent manufacturers?

Mr. Schwab: Yes. I was an independent manufacturer at that time, and I always got more for my steel than the Steel Corporation did.

Mr. Cockran: Independence has many virtues, has it not?

Mr. Schwab: And some disadvantages.

Mr. Clark: You say that the railroads do not object to your charging this high price. They just simply load the cost of the steel rails off on their patrons, do they not?

Mr. Schwab: Quite true.

Mr. Clark: So that the bottom fellow pays the whole business at last?

Mr. Schwab: That is going pretty far down the line.

Mr. Clark: I will ask another question simply for information. You have stated about rebuilding these furnaces at Braddock three times in five years.

Mr. Schwab: It was a converting mill.

Mr. Clark: What I want to ask is if this has been going on in the last five years more than ever before—these changes in processes that necessitate this rebuilding of plants?

Mr. Schwab: I will give you an illustration of that. I make this prediction, that in five years from now there will not be a single Bessemer converting works for making steel in the United States. That means that every man who has his money invested in Bessemer works for making steel rails will have to throw it away as useless and of no value before five years. The change is rapidly taking place now. If you will look at statistics you will see all the steel rails are getting to be the open hearth. Bessemer will be of no use. The result is all these changes will have to be made at tremendous cost. The same is true of structural steel. The new mills which I have built at Bethlehem have made a radical change in the character of structural steel, so that most of the structural steel plants of the United States will have to be changed within the next five years, and that has been the history of the steel business since I have been connected with it.

Mr. Clark: Now, two questions——

M. Schwab: Not at one time?

Mr. Clark: No. I do not know nearly so much about this steel question as Mr. Underwood does. I want to ask a question for my own information. I take it from what you said in a portion of your evidence here to-day that this open hearth steel is superior to the Bessemer steel.

Mr. Schwab: For certain purposes.

Mr. Clark: The question I wanted to ask a while ago and will ask now, and your answer awhile ago possibly does away with it, is whether in your judgment the time has come when these rapid changes in the very expensive business of building these plants have reached their limit, or whether there is a prospect of improvements being constantly made that will later wipe out that process and cause the throwing away of these big plants and building new ones?

Mr. Schwab: I think that is true. The open hearth process has been developing during these past 10 years. It was not believed it would make any material change in the plants except for special things. The demand for quality has made it of such a character that practically all steel must be made by the open hearth process. We have taken another step in advance which has been developed by the Germans, and that is the electric method of producing steel, which is an advance again over the open hearth, that I am certain in the next 10 years, or probably quicker, depending upon the rapidity of the development, will probably make all open hearths practically useless.

Mr. Clark: Well, you are able to get your product out cheaper on account of these?

Mr. Schwab: No; we are not. You do not get it cheaper. These processes have not been for the purpose of cheapening the product, but of bettering the quality. Each betterment of quality has added to the cost.

Mr. Clark: In the end that is to the advantage of the public, who consume it, provided they get it at the same price?

Mr. Schwab: The advance in price is about equal to the cost.

Mr. Clark: Do you know what the proportion of the output of steel made by all of the independent concerns in the United States is as compared to the total output of the United States? How much does the United States Steel Corporation make and how much do the rest of them make?

Mr. Schwab: That is a matter of record, but I think the Steel Corporation makes between 40 and 45 per cent.

Mr. Clark: Does that include the Tennessee Company?

Mr. Schwab: No; I did not include that.

Mr. Clark: If you include with the United States Steel Corporation output the output of this Tennessee concern, which it bought with the consent of the President of the United States, how much would the proportion be?

Mr. Schwab: Probably 44 or 45 per cent.

Mr. Clark: You do not think it makes a majority?

Mr. Schwab: No, I do not think so.

The Chairman: You are not swearing the President did consent to its purchase?

Mr. Schwab: No, I know nothing about it.

Mr. Clark: I am not either, but it was a matter of common notoriety that before it dared to buy that concern, Morgan or someone representing him went to the President and got his permission to do it.

Mr. Schwab: I do not know anything about it.

Mr. Underwood: The percentage of production of the United States Steel Corporation was estimated a short time ago at 47 per cent. of the total production for the United States.

Mr. Schwab: Yes, that is probably nearly right.

Mr. Bonynge: What other steel products are sold abroad for less than the same steel products are sold in the United States, besides steel rails?

Mr. Schwab: The principal lines of steel of which I have spoken—structural steel in all its forms—plates, girders, and similar things, and steel rails.

Mr. Bonynge: All sold for less than in the United States?

Mr. Schwab: I cannot say that always, but as a rule that is true.

Mr. Bonynge: What is the percentage of steel products produced in the United States of all kinds that is sold abroad?

Mr. Schwab: I could not tell off hand. I could make a guess. I think it is about the same as rails—from 5 to 7 per cent. That is my judgment. I think it is higher this year. I am guessing at that, but I should not be surprised if it is 20 per cent. this year.

Mr. Bonynge: If those sales had not been made at the reduced prices abroad, would it have had any effect on the prices charged to the home consumer?

Mr. Schwab: Under existing conditions, I think not, although it made a difference in the profit. Their profits would have been much higher on the home product if they had not sold abroad in this way.

Mr. Bonynge: The selling price would have been the same?

Mr. Schwab: I think probably it would. I am sure it would in the matter of rails, and I think in most of the other lines.

Mr. Clark: Suppose you put the market price of rails and steel products to the home consumer down to the same basis you did to the foreign consumer, do you not think the home consumption would have swelled to the extent of this foreign export?

Mr. Schwab: I do not think it would have increased a ton.

Mr. Clark: I believe then there is no hope of getting a lower price?

Mr. Schwab: No, I am afraid not.

Mr. Hill: You have been very frank in your answers from the manufacturer's standpoint.

Mr. Schwab: Thank you, sir.

Mr. Hill: I want to ask this question: Taking the general welfare of this country, the foreign trade and your industry in consideration, what change, if any, would you suggest with reference to the iron and steel tariffs?

Mr. Schwab: My personal view is that I would not make any change. I do not mind saying a moderate change is not going to seriously hurt. I think a radical change will make a very great difference. I am a manufacturer, and this is a manufacturer's point of view, and I would not make any changes.

Mr. Longworth: You are familiar with the iron ore production of Cuba?

Mr. Schwab: Yes, sir.

Mr. Longworth: Can you state what amount of ore is in sight there now?

Mr. Schwab: There is a very large tonnage in sight. There is a peculiar condition that to my mind is going to make a radical change in the iron ore situation. There has been discovered in Cuba, within the last few years, a very large deposit of ore; indeed, some engineers estimate it quite as large as the Mesaba Range; it is of a different character, however, in that it is wet, and needs drying before it can be transported. It has some problems in connection with it to be worked out, but the deposits are very important, as to tonnage.

Mr. Longworth: How would it compare with the ore in the Mesaba range in quality?

Mr. Schwab: The quality is a totally different proposition; in some respects very much better, in that the ore contains nickel, and steel made from that ore will contain from 1 to 3 per cent. of nickel, and that of course adds much to its value for certain purposes.

Mr. Longworth: At what figure can that ore be landed in Pittsburgh to-day?

Mr. Schwab: About the same as Lake ore. It can be landed at the Eastern furnaces at much less, but the cost of getting the coke to the Eastern furnaces is an item of serious consideration. When I say the same in Pittsburgh, I am assuming the same expenditure in appliances for shipping, &c., as are made for Pittsburgh. The cost to the Eastern furnaces is much less for the ore, but, on the other hand, the cost of fuel to the Eastern furnaces is much greater, so that the total cost of producing pig iron in the East as compared with Pittsburgh is slightly in favor of Pittsburgh.

Orders have been placed by the St. Louis Southwestern Railway for 31 locomotives and 35 passenger cars. The former went to the Baldwin Locomotive Works, Philadelphia, and the latter to the American Car & Foundry Company, St. Louis.

O. E. Kruger, Mathias Slater, R. A. Slater and M. H. Joy have purchased the Penn Shovel Company plant at Warren, Ohio, of receiver W. Gordon Brown, and the sale was confirmed by the United States Circuit Court in Cleveland. The plant will be operated by the new owners.

The Lindemann & Hoverson Company's old plant at 348-354 Florida street, Milwaukee, Wis., has been leased by the Heinn Company, manufacturer of machine specialties. The Lindemann & Hoverson Company is now occupying its new plant.

The plant of the Champion Saw & Gas Engine Company at Beaver, Pa., sold at sheriff's sale, was bought in by creditors. It is probable the plant will be occupied by a new company in the manufacture of the McAdams water heater.

The gas engine department and foundries of the Fairbanks-Morse Company, located at Beloit, Wis., were opened up for business again December 7.

Press reports that the National Tube Company would build a new blast furnace at Benwood, W. Va., are absolutely untrue. The matter has not even been considered.

The Production of Platinum in the United States.

The decline in price of ingot platinum on the New York market from $38 per troy ounce on January 1, 1907, to $25 per ounce on December 31 of the same year, was accompanied by a notable decrease in production of fine platinum—from 1439 ounces, valued at $45,189, in 1906, to 357 ounces, valued at $10,589, in 1907. Of the total output in the later year, 300 ounces came from Butte, Del Norte, Humboldt, Placer, Plumas, Trinity and Sacramento counties, in California, and 57 ounces from Coos, Curry and Josephine counties, in Oregon.

In an advance chapter from "Mineral Resources of the United States, Calendar Year 1907," on the production of platinum in 1907, David T. Day, of the United States Geological Survey, says:

"The decline in price in the United States increased the feeling of insecurity on the part of the platinum miners as to the value they would secure from their material and rendered the search for platinum less active."

The total value of platinum metals imported and entered for consumption in the United States in 1907 is given as $2,684,642—a decrease of $1,104,117 as compared with the value of the imports in 1906.

Continued interest is shown in the project for developing the platinum localities in the department of Cauca, Columbia, but development work has not yet reached the point of commercial production.

Contracts for practically the entire supply of platinum in Russia have been made for a number of years ahead, and fluctuations in prices have no significance in regard to the total annual output.

At the regular monthly meeting of the Engineers' Society of Western Pennsylvania, held in the Fulton Building on the evening of December 15, Alfred Sang of the Garland Nut & Rivet Company read a paper on the subject of "The Corrosion of Iron and Steel." The author presented a paper of special interest to engineers, and the subject was covered in a comprehensive manner under the following sub-divisions: The Decay of Iron, Composition of Rust, Formation of Rust, Carbonic Acid Theory, Hydrogen Peroxide Theory, Electrolytic Theory, Solution of Iron in Water, Action of Occluded Gases, Structure of Iron and Steel, Relation of Structure to Corrosion, Effect of Stress, Comparative Corrosion of Iron and Steel, Influence of Modern Conditions, Corrosion in Air, Corrosion in Fresh Water, Corrosion in Salt Water, Contact Action in Sea Water, Corrosion of Ships, Corrosion of Rails, Corrosion of Tubes, Corrosion of Wire, Influence of Impurities in the Metal, Comparative Corrosion of Acid and Basic Steel, Influence of Electric Current, Steel Embedded in Concrete and The Inhibition of Rusting.

The stock of gold coin in the United States June 30, 1908, is estimated by Frank A. Leach, director of the Mint, to have been $1,535,169,328, and the stock of silver coin $715,615,595, including $568,259,812 in silver dollars. The stock of gold bullion held by the Treasury June 30, 1908, amounted to $79,971,247, and the silver bullion (cost value), $1,979,000. The stock of gold coin in the world January 1, 1908, is estimated to have been $7,014,600,000; silver coin, $3,530,700,000, and the uncovered paper, $4,302,500,000.

Initial steps are being taken at Milwaukee, Wis., for the erection of a new bascule bridge at Oneida street. This is another step in the policy of replacing all swing bridges in the city with the new bascule design bridges. Bonds for its erection will probably be voted at the spring election.

F. M. Gardner has been appointed receiver of the Gardner Convertible Steam & Gas Engine Company, Washington, Pa.

The Cincinnati 22-In. Planer.

In its new 22-in. planer the Cincinnati Planer Company, Cincinnati, Ohio, has added a smaller size to its line than any formerly built, the 24-in. size having been the previous smallest machine. This machine planes 22 in. wide by 22 in. high and is made in 3, 4 and 5 ft. lengths. As shown in Fig. 1, it has but one cutting speed, but is so designed that the company's two-speed arrangement can be furnished, giving cutting speeds of 24 and 50 ft. per minute, with a constant return.

The bed is bored out and bushings are fitted into these bored holes, in which the shafts revolve. These

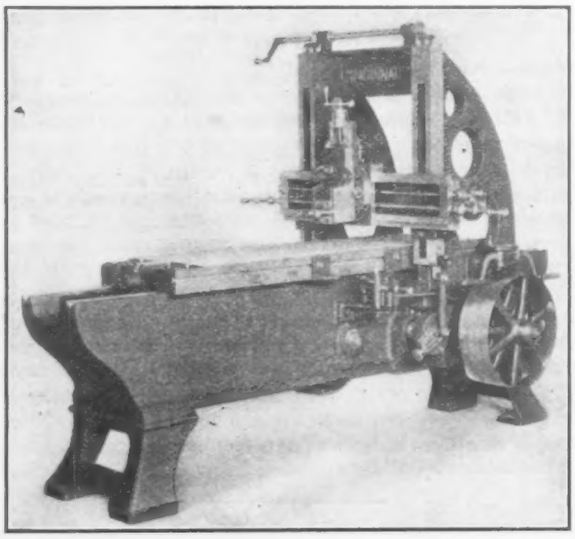


Fig. 1.—The New 22-In. Planer Built by the Cincinnati Planer Company, Cincinnati, Ohio.

bushings have a groove milled on the outside about ⅜ in. wide and deep, and also an oil groove cut on the inside both on top and bottom. This method insures positive lubrication and prevents the scoring of the shafts. The bed is fitted with oil rollers for automatically oiling the ways of the machine.

The shifting device is of new design and, as will be

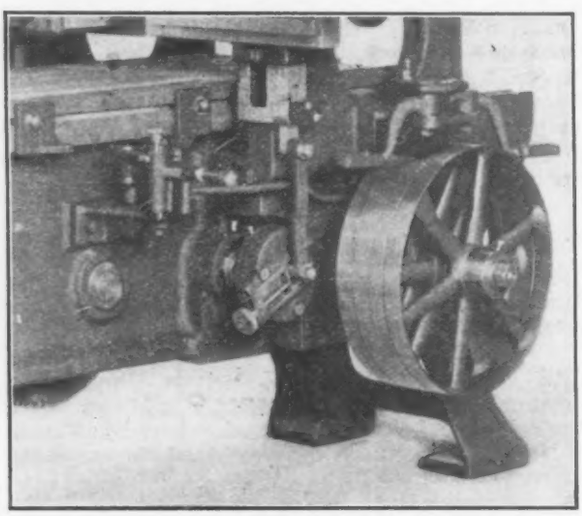


Fig. 2.—Detail of the Belt Shifting Mechanism.

seen from Fig. 2, is very simple in construction, designed with special reference to high speeds and short stroke work. It is provided with a safety locking device and another controlling handle on the opposite side of the bed, so that the table can be reversed from either side.

The crank handles on the rail are fixed in their places and the grip itself is fitted loose, so that the operator can retain a tight hold on it while turning the screw or rod rapidly. The saddle is graduated to 360 degrees, or a full circle, so that the angles can be read from both sides of the machine. The down feed screw is fitted with a collar graduated to thousandths of an inch. The gearing is very powerful and cut from solid stock; the large gears and rack are made from semisteel castings and the pinions from steel forgings. While all of the parts of the machine have been made very rigid for heavy service, special attention has been given to facilities for rapid handling.

Trade Publications.

Compressors, Rock Drills, Channellers, Rock Excavating Machinery and Pumping Systems.—Ingersoll-Rand Company, New York. Four booklets. No. 36-A treats of the Ingersoll-Rand Corliss compressors, showing standard machines in use down to the smallest known size. In the rock drill and channeller booklet, No. 21-A, electric air drills are shown in use and tables of dimensions of the company's standard sizes are given. It is explained that anything in the way of electric air rock drills can be had from the company. In the booklet devoted to rock excavating machinery, No. 47-A, the Sargent rock drill and other types of drills are shown and some space is given to electric air channellers. Pneumatic pumping systems are described in No. 74-B, and the advantages of compressed air as a medium for transferring water are outlined. Several diagrams are given explaining the company's system and some installations are illustrated. A diagram showing a typical displacement pump system is included.

Separators.—Harrison Safety Boiler Works, North Philadelphia, Pa. Booklet entitled "Separator Talks." Explains the first principles of separating water or oil from steam or gases. The various devices for this purpose are described, and in addition the booklet contains drawings and tables of dimensions of the Cochrane steam and oil separators made by the company.

Iron Cement, Sheet Packing, Corrugated Steel Gaskets, &c.—Smooth-on Mfg. Company, Jersey City, N. J. "Smooth-on Instruction Book," 95 pages, seventh edition. Lists the company's line of Smooth-on compounds and gives general directions for use Considerable space is given to describing the Smooth-on cements, and illustrations are given showing some big repair jobs which have been done with the iron cement. One of the most interesting of these is a 45-in. centrifugal pump which was split almost in half, showing a crack over 20 ft. long and in some places ¾ in. wide. This was repaired eight years ago at the Brooklyn Navy Yard and is still in good condition. Space is also given to the Smooth-on rivet cement and Smooth-on joints made with a silicated iron cement to connect bell and spigot cast iron pipe, in place of caulking with lead.

Foundry Equipment.—S. Obermayer Company, Cincinnati, Ohio. General Catalogue No. 40. In the review of this catalogue printed in the last issue the company's address was given incorrectly as Cleveland. The headquarters are in Cincinnati, and there are branch offices in Chicago and Pittsburgh.

Water Motors.—L. E. Rhodes, Hartford, Conn. Folder. Devoted to the Clipper water motor No. 2, plain and geared, together with accessories, such as pulley stand, polishing head and bottle washer. A table gives the horsepower for various pressures and diameters of jet.

Gas Blast Furnaces, Pressure Blowers, Pyrometers.—U. S. Gas Furnace Company, Providence, R. I. Catalogue. Illustrates and describes the company's line of gas blast furnaces, pressure Blowers and pyrometers for the treatment of carbon and high speed steel tools for mechanical purposes that require a uniform heat. Included are a bench forge, No. 2 forge, oven furnace, lead and cyanide hardening furnaces, tempering furnace, soft metal melting furnace, positive pressure blower and the W. H. Bristol electric pyrometer.

Contracts for tanks, furnaces, burners, forges, compressors, pipes and other appliances used in the oil fields have been placed with Tate, Jones & Co., Inc., Pittsburgh, by the Tobatta Foundry & Mfg. Company, Tobatta, Japan. Y. I. Kawa, representing the Japanese company, has been in this country for some weeks.

The Lackawanna Steel Company has made a long-time contract with the Empire Limestone Company to do the quarrying and loading of limestone on the steel company's cars, at the limestone properties it acquired last year in Lewiston Township, Niagara County, New York.

Seventy-five members of the Engineers' Society of Milwaukee attended the monthly meeting on the evening of December 9, and listened to a talk by E. J. Kearney, secretary of the Kearney & Trecker Company, on the "Construction and Use of Milling Machines."

Production of Coal Gas in the United States

According to figures gathered by Edward W. Parker, chief statistician of the United States Geological Survey, the total quantity of gas produced at coal gas works and by-product coke works in the United States in 1907, as reported by the 513 companies that made returns, was 58,096,478,402 cu. ft. Of this product 3,399,680,509 cu. ft. were lost through leakage, fire or otherwise and were reported as unaccounted for. The net product sold, therefore, amounted to 54,696,797,893 cu. ft., which was valued at $36,327,879, or an average of 66 cents per 1000 ft. Statistics of this product for 1906 were not published by the Survey, but those for 1905 shows that the total quantity of gas sold in that year was 40,454,215,132 cu. ft., valued at $32,937,456, an average of 81.4 cents per 1000 ft. This apparent decline in value is attributed chiefly to the greatly increased production of by-product oven gas, most of which is used for fuel and all of which is sold at first hand at much lower rates than those obtained for gas produced as a primary product of gas works.

According to the best information obtainable the quantity of gas sold for illuminating purposes in 1907 was approximately 30,033,971,443 cu. ft., valued at $22,990,040, or 77 cents per 1000 ft., while that sold for fuel purposes was 24,662,826,450 cu. ft., valued at $13,337,839, or 54 cents per 1000 ft. In 1905 the quantity of gas sold for illuminating purposes was 26,817,836,022 cu. ft., valued at $23,138,361, or 86.3 cents per 1000 ft., and the gas sold for fuel purposes was 13,636,379,110 cu. ft., valued at $9,799,095, or 71.9 cents per 1000 ft. Exactness in the matter of this separation based on the purposes for which the gas is used is not claimed, and the figures must be regarded as only approximately correct.

The 1907 returns show that Pennsylvania has superseded New York as the greatest producer and consumer of coal gas, largely as the result of the operations of the by-product coke ovens at Steelton and Lebanon. The production of coal gas reported from Pennsylvania in 1907 was nearly 9,300,000,000 cu. ft., about 80 per cent. of which was sold for fuel purposes. New York produced 8,300,000,000 cu. ft., nearly 5,000,000,000 cu. ft. of which was sold for illuminating purposes, so that while Pennsylvania's production exceeded New York's by nearly 1,000,000,000 cu. ft., the value of the gas produced in New York exceeded that of Pennsylvania by $2,341,392, or 80 per cent. Massachusetts ranked third in the production of coal gas, with Ohio fourth, Michigan fifth, Illinois sixth and Wisconsin seventh, all of these, with the exception of Ohio, having a larger production of coal gas on account of the operations of by-product ovens. In production of water gas New York far outranks all the other States, with more than one-third of the total output.

The Refined Iron & Horse Shoe Company, Pittsburgh, has purchased the property of the Downey Pump Company, Downeyville, Pa., consisting of about 2 acres, upon which are located a two-story brick building, 40 x 163 ft., which will be used as a machine shop; a brick building, 40 x 80 ft., formerly used as a foundry, and a frame storage building, 30 x 140 ft. A new ironclad building, 60 x 120 ft., will be erected, in which the rolling mill will be located. An 18-in. and a 10-in. mill will be installed, which will be operated by a battery of three 200-hp. boilers and a 500-hp. engine. In the machine shop electric power will be developed by a gas engine direct connected to a generator, and individual motors will be attached to each machine. The newly acquired plant will be used for the manufacture of horseshoes.

The B. Carrico Motor Company, in which several tool manufacturers and machinery makers are interested, has taken the third and fourth floors of the large building, 208 to 214 Elm street, Cincinnati, the headquarters of Julius Uihlein & Co., and will prepare at once for the manufacture of the Carrico motor to be sold to the automobile trade. Some machinery will be installed, and the assembling will all be done in the new quarters.

Millions for Wooden Barrels.

The farmer with his potatoes and his apples, the miller with his flour and meal, the hardwareman with his nails, the cement manufacturer, and the many other users of the faithful slack barrel, that combination of staves, hoops and heading, which is not intended to hold water or something stronger in fluid form, used forest products last year having the enormous value of $15,800,253. The average man would little suspect that the humble barrel plays so important a part in the expense accounts of the American farmer and manufacturer, yet figures compiled by the Census Bureau in co-operation with the United States Forest Service develop this interesting truth. Moreover, statistics taken directly from reports from 950 cooperage mills in all parts of the United States show an increase of $1,569,688, or 11 per cent., in the value of last year's product over that of the previous year.

In distinct contrast to tight cooperage stock, which in the main requires oak timber for its raw material, slack cooperage stock, particularly staves and heading, utilized in greater or less degree most of the commercially important trees in the country, and for this reason its manufacture was far more widely distributed than is the case with that of tight cooperage stock. Twenty-one species of wood contributed to the total slack stave production last year. Nearly two-thirds of the output, however, was manufactured from the four species, red gum, pine, elm and beech, in the order named.

The figures disclose an interesting movement in the industry in the substitution of less expensive woods for those which for many years were drawn upon most heavily for slack stave material, but which, owing to growing scarcity and advancing cost, are rapidly being displaced. In 1906 elm staves were manufactured in larger quantities than those from any other wood, and constituted nearly one-fourth of the total production for that year, with pine and red gum occupying second and third places, respectively. Last year gum jumped to first place, pine to second, while elm, with a falling off of 36 per cent. in production, dropped to third place. Beech, maple, spruce, chestnut and ash followed, in the order named.

While slack stave and heading production was reported last year from practically all the States engaged in the manufacture of lumber, a considerable percentage of the stock in fact being turned out as a by-product of lumber, the industry was to an extent localized, the five States of Pennsylvania, Missouri, Michigan, Arkansas and Virginia, in the order named, contributing 56.8 per cent. of the total production. The distribution of the industry of hoop manufacture is much more limited than that of staves and heading, and is due primarily to the fact that this commodity is made chiefly from elm timber. Ohio led in the quantity of hoops manufactured, closely followed by Indiana, the output of these two States forming 67.3 per cent. of the total production.

For several months the rod and wire nail mills at the Donora Works of the American Steel & Wire Company at Donora, Pa., have been operating at practically full capacity. Owing to the heavy demand for wire products one of the two blast furnaces at Donora, both of which have been idle for about a year, will be put in operation January 2, and on the same date six of the 12 50-ton open hearth furnaces will be started. It is probable that early in the new year, if the demand for wire products holds up, the other blast furnace and the remaining open hearth furnaces will be put in operation.

The Allegheny Steel Company, Pittsburgh, with plate and sheet mills at Brackenridge, Pa., has decided to add a 20-ton open hearth furnace to its steel plant, which will make a total of four 50-ton furnaces and one 20-ton furnace. The new small furnace will be used for making steel to be rolled into sheets and plates where special analysis is required. The present open hearth building will be extended to accommodate the new furnace and one overhead electric crane will be installed to handle the material.

THE IRON AGE

Established in 1855.

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The Gary Plant in British Eyes.

The prodigious additions to the United States Steel Corporation's capacity provided by the new construction work at Gary, Ind., are put in a new light by an editorial in the London *Iron and Coal Trades Review*, in which it is said:

> Owing to the peculiar alignment in American iron and steel affairs created in part by the formation of the United States Steel Corporation, in part by the optimism with which new iron and steel ventures are considered, and in part by the passing of control of the Lake Superior iron ore lands into so few hands, the building of new plants has not proceeded in accordance with the natural laws of trade. New plants are built with what appears to be an almost reckless abandon. They seem to be as toys in the nursery or pawns in a game of chess. Thus the Steel Corporation, finding itself making extremely large profits, decided that it would not be well to make heavy disbursements in dividends to its common stockholders, and that it would be better to invest the money in additional plants, and thereby to help to "squeeze out the water" in the securities. There was not, apparently, any careful consideration of the probable demands of the market, but rather a cheerful trust in the previously observed law that production in the States doubles every ten years.

Some allowances must naturally be made for the British standpoint, from which the scale of American outlay for iron and steel plants has always seemed prodigal. "Squeezing out the water" is the expression commonly employed to express the effect of the enormous expenditures for new properties which have been steadily made by the United States Steel Corporation, but this can hardly be called the object of such outlays. Water is not squeezed out by building plant which cannot be utilized for the increase of profits or that can only be operated to the displacement of fit and profitable plants already existing. In the report of the Steel Corporation for 1905 this statement was made:

> Although the capacity of the producing furnaces and mills located at Chicago and vicinity has been materially increased from time to time, it has not kept pace with the increased and rapidly increasing consumption tributary to this location; and therefore a large percentage of this tonnage is now supplied from Eastern mills. In consequence of these conditions it has been decided to construct and put into operation a new plant to be located on the south shore of Lake Michigan, in Calumet Township, Lake County, and a large acreage of land has been purchased for that purpose. It is proposed to construct a plant of the most modern standard, and to completely equip the same for the manufacture of pig iron, Bessemer and open hearth steel, and a great variety of finished steel products. The total cost will be large. The conclusion to build this plant has been made after very careful consideration by the Finance Committee and the Board of Directors of this corporation. Notwithstanding the large sums which have been paid since the organization of the corporation for increasing the producing capacity by subsidiary companies, they have only maintained their position in the trade.

Then follows a statement of percentages, showing that the Steel Corporation companies were barely holding their original proportion of the country's production of pig iron, making 43.2 per cent. in 1901 and 44.2 per cent. in 1905, while they had fallen back in percentage of steel ingots, or from 66.2 per cent. in 1901 to 60.2 per cent. in 1905. The point was that the expansion forced upon other companies by their increasing trade, and met by moderate increments of plant, as each, acting on its own initiative, saw the opportunity to employ a larger capacity, reinforced strongly the Steel Corporation's judgment of the necessity for large investments in new plant. Naturally the Steel Corporation, with its exceptional resources, was in the best position to undertake a large new project, with all the chances which the history of the American iron trade suggests, of having it completed in a time of slack demand or even depression. That just that condition existed when the first group of blast furnaces and open hearth furnaces was nearing completion at Gary is no indication that the "probable demands of the market" were not thoroughly taken into account when the Gary enterprise was launched. It is rather an indication that the iron trade is behaving in the orthodox way and that the Gary plant will be ready in good time for the next advance that is to carry our consumption of steel to its highest record.

A "cheerful trust" in the constancy of what many have come to regard as a law of the increase in steel consumption in the United States falls somewhat short of explaining a decision involving $60,000,000 in appropriations already made and certain to mean many millions more. Though not avowed in the original official announcement, it can well be that an increase in the export trade of the Steel Corporation was no small factor in the plan. The Pittsburgh plants being the natural suppliers of that trade would have more capacity available for it when the Gary mills were ready to meet the great demand of the districts tributary to Chicago. And no great stretch of fancy is required to look for the doubling of the iron and steel exports of the United States on the next world wide expansion of consumption of steel. Moreover, the swiftness of the revolution that is supplanting Bessemer steel with open hearth demanded that if the new open hearth plant were not put at Gary it must of necessity have been provided somewhere. Further, the great Western district to which steel could be delivered more cheaply from the foot of Lake Michigan than from any other meeting place of ore and coke is entitled to a steel center of its own, for Gary doubtless means sooner or later the introduction of Chicago basing prices for Western busiress.

If it be said that the doubling of iron and steel consumption every 10 years, or in seven years, as has at times been the case, cannot continue indefinitely, it may also be said that there are no indications that it may not hold for a definite and measurable period of years. The day of 100,000,000 and even of 125,000,000 people in the United States is not far ahead, and more Garys must be built against their coming, even if their per capita consumption of steel be only the rate of to-day. The belief that when iron consumption is down it will never get back to the hight from which it fell has been very costly to the American iron trade. Gary is one of the signs of a better averaging of the fat and the lean.

The Small Shop and the Apprentice System.

The small shop of to-day does not occupy an advantageous position in its relation to the apprentice system as compared with the large industrial establishment. Taking the machine shops of the country as a whole, the aggregate payroll of concerns employing comparatively few men reaches an important figure. They demand

first rate men as the basis of their forces, just as do their large neighbors. A well managed plant of this class cannot be bettered as a school for the mechanic if the apprentiice system is a good one. But most owners of small shops feel themselves unable to assist in the training of young men along modern lines. The number of boys they can take is necessarily limited. Even proportionately to the total of hands employed they cannot have so large a force of indentured apprentices, or at any rate where the system is established they do not. One great obstacle is that technical school graduates quite naturally seek employment in larger works where the prospect of advancement may seem better. If they are known as good men the larger concerns do not always hesitate to attract them from the employment of those who trained them, the inducement being better wages or the hope of a position of responsibility as foreman. The small employer thus has much of his pains for nothing. The lad's contract holds him to his work, under penalty of forfeiture of his bond money, until his time is up. If the employer has done his duty by the pupil, if he has taught him the several branches of his trade and turned him out a well trained, allround mechanic, then the boy has received in the way of wages and instruction more than he has given in labor. If after a little time he goes elsewhere the employer feels that his effort has not been worth the while. He is glad to assist in the good work of educating young men, but he would, of course, like to reap some of the benefits himself.

One of the speakers at the recent convention of the National Society for the Promotion of Industrial Education urged the small employer to call upon the public schools or private educational agencies for the classroom work of his apprentices, while he looks after their training in the shop. Such amplifications of the system would be feasible if some guarantee could be given the employer that the pupil would remain with him when his course has been completed; if, for example, the indenture not only called for the several years of service under apprenticeship, but also included a contract that the graduate should then stay with his employer for a certain period. Doubtless this would be impracticable, even if such a contract would hold in law; young men would not consent to bind their future for so long a time. Yet, morally, it would be a wholly logical transaction, the penalty being the forfeiture of a sum of money by the journeyman if he should terminate his relations with his home shop before his agreed service had been completed. It would pay something toward what would otherwise be a loss to the employer who had given the boy those advantages which happily have become common under the revival of the apprentice system.

It is not to be wondered at that the small shop has so few apprentices in the real meaning of the word. Instead, boys are taken and given merely such training as is incident to maximum production. They have the advantage that there is less likelihood of their work being specialized within narrow limits than is the case in large works where the boy, as distinguished from the apprentice, is apt to have little variety in his labor, and consequently acquires small knowledge beyond a few machines and often confines his education to one tool. Where there are shops in the same community that take apprentices under the indenture system they get the pick of the material. The small shop without the system takes what is left of the youth seeking the trade as a livelihood. This is one of the ways in which the small employer is the loser if he takes no indentured apprentices.

The subject constitutes a problem in itself and one worthy of most careful consideration. It is easy to generalize on what should be done under these conditions for the industrial welfare of the country as a whole, but what is required is a practical solution that would appeal to the owners of small shops, and especially to those owners whose means are small. They cannot afford many things that are easily practicable in large works. It is well enough to tell them they should let the boys take an hour or two a day to attend classes in school and pay them for their time, but in practice nearly every such employer would term this an absolute impossibility. It is quite probable that a system to meet these conditions will be evolved from that which is bringing such admirable results in the larger shops. It is not that the same system would not be best in ultimate results if it could be established in every manufacturing plant. But if it cannot be, if the boys who go into the smaller establishments cannot have the best because of controlling circumstances, then a system should be devised to meet the necessary requirements. The prevailing method simply brings up a lot of half trained men, few of whom will ever get into the class of skilled workmen.

The Saloon and the Noon Hour.

Manufacturers who have had the opportunity for comparison are convinced that the presence of saloons in convenient proximity to industrial plants is a source of decreased efficiency and production and of increased liability to accidents. The question is not one of prohibition or temperance, nor of the personal habits of employees after working hours or on holidays. It is an essentially utilitarian issue, having to do chiefly with the effect of the opportunity to drink between working periods.

This was well instanced in the case of one of the great plants of the American Steel & Wire Company. Formerly what was known as a "dead line" was drawn by the authorities having the issuing of liquor licenses, so that there was no saloon within a considerable distance of the works, and the noon hour hardly afforded time for the workmen to get to even the nearest and return to work before the whistle blew. A few years ago the "dead line" was broken, and saloons were established close to the gates of the plant. The decrease in productive capacity was noticeable, and at the same time the number of accidents increased materially. After several years of this condition a local upheaval placed the community under prohibition, incidentally ridding the neighborhood in question of its drinking places. An increase in efficiency then followed, accompanied by a falling off in the percentage of accidents.

Similar instances are given by other large employers of labor, among them men who are not at all in sympathy with radical reform movements, but who are convinced that city or town authorities should do their utmost to isolate manufacturing neighborhoods from the immediate influences of the saloon. In the very large centers the isolation of manufacturing plants from undesirable surroundings may be impossible or impracticable, but those who are familiar with the influences that obtain in smaller communities realize that the regulation of a neighborhood is feasible if the owners of industrial establishments will set themselves to the task. A large percentage of workmen will co-operate, understanding well that accidents may happen to them because of the indiscretions of fellow workmen, and that the employer is not liable under such circumstances. This class of em-

ployees is also influenced by other and higher motives than those of selfishness. In other words, the question of excluding the saloon from the shop environments may easily be made one of co-operation between owners and an important element among their help.

American Sheet & Tin Plate Company Changes.

On January 1 some important changes among officials of the American Sheet & Tin Plate Company will be made. C. W. Bray, president, has tendered his resignation and will be succeeded by E. W. Pargny, now vice-president. S. A. Davis, formerly superintendent of the Apollo Works, and afterward manager of the Kiskeminetas Valley group of the American Sheet & Tin Plate Company's plants, and who, upon the retirement of Warner Leeds and John Warner, was made second vice-president, is to succeed Mr. Pargny as first vice-president. J. I. Andrews has been appointed general manager of sales, while C. W. Bennett, now assistant to the president, continues in that position with increased duties.

EUGENE W. PARGNY,
President of the American Sheet & Tin Plate Company.

Eugene Wellington Pargny, the incoming president, was born in Louisville, Ky., 41 years ago. He spent his early life there, obtaining his education in local private schools. His first business connection was with the Apollo Iron & Steel Company in 1890 in the operating department. Being transferred to the Pittsburgh office as purchasing agent, he was some time afterward made general sales agent, filling both positions for some years. When the American Sheet Steel Company was organized, taking over the Apollo Iron & Steel Company, Mr. Pargny was made manager of the Kiskeminetas Valley mills, which included the Vandergrift, Hyde Park, Leechburg, Saltsburg and Apollo works. He continued in this position until the formation of the American Sheet & Tin Plate Company, which took over the American Sheet Steel Company and the American Tin Plate Company, when he was made vice-president of the consolidation. Upon the retirement of John A. Topping as president of the American Sheet & Tin Plate Company, and the appointment of C. W. Bray as president, Mr. Pargny was appointed first vice-president and has filled that position most acceptably. Under his administration the affairs of the company will no doubt be as ably conducted in the future as they have been in the past.

C. W. Bray, whose resignation was received with sincere regret by all the company's officials and employees, recently bought a farm at Valley Forge, near Philadelphia, and intends to devote most of his time to agricultural pursuits, but he has other important interests to which he will be able to give attention. He is regarded as one of the foremost mechanical engineers in the country, and his services have been invaluable to the American Sheet & Tin Plate Company. He is the inventor of a number of labor saving appliances in use in sheet and tin plate mills, among which is the Bray continuous sheet rolling process, now in successful operation at the Mercer Works. J. I. Andrews, the incoming general manager of sales, has made a splendid record in the company's selling department, with which he has been connected for some years, and the same can be said of C. W. Bennett, assistant to the president, whose duties have been materially increased by the changes to be made.

The Outlook for Aluminum.

Commenting on the slump in the price of aluminum in London to 15 and 16 cents a pound and the drop in this country to 24 cents, as against the former steady price of 40 cents, the *Electrochemical and Metallurgical Industry* says:

It is questionable whether the price will remain as low as it is at present. It seems quite certain that some of the European plants are now forced to sell aluminum below self-cost (if self-cost includes interest on capital, depreciation, etc.). The aluminum industry has always been carried on with greatest secrecy. Nevertheless, the cost of producing aluminum has been estimated to be something like 15 or 16 cents a pound, but the exact meaning of "cost" in these estimates is very doubtful. On the best authority which we have in a special case, the cost, including everything, figured out as only very slightly less than 16 cents per pound in a proposed French mountain plant (which was not erected, but was figured out with greatest care), the cost of electric power being in this case about $8 per horsepower year. This was under very favorable conditions of supply of raw materials and electric power. There is no such cheap electric power available for prospective aluminum makers in this country. As a matter of fact, the situation in the aluminum industry is not very attractive for outsiders to start competition with the present sole producer after the expiration of the Bradley patent in 1909. We may expect fluctuations of the price of aluminum in the near future. The price may finally rise again, but it seems certain that it can never return to the old figures of two years ago. Aluminum appears to have come down for good to a price comparable with copper. There is very little difference now in the London price quotations for copper and aluminum. The net result will be the use of aluminum for many purposes to which it is very well suited, while the former high prices were prohibitive.

A Nonmagnetic Yacht.

The Carnegie Institution, Washington, D. C., has awarded to the Tebo Yacht Basin Company, Brooklyn, N. Y., the contract for the construction of a vessel to be known as the magnetic survey yacht Carnegie. It is to be constructed without the use of iron or steel or any other magnetic metal. The purpose of the institution is to make with this ship an accurate magnetic study of the ocean.

The vessel will be 155 ft. long, 33 ft. beam, and 12 ft. draft, and barkentine rigged. It will cost approximately $125,000. It will be primarily a sailing vessel, but will be equipped with auxiliary power to give a speed of 6 miles an hour. This power will be supplied by gas engines. The propelling engines, machinery and other metal parts on the craft will be chiefly bronze. Manganese metal and gun metal will also be employed. Every bolt, nail, bar and brace in the vessel will be of these materials.

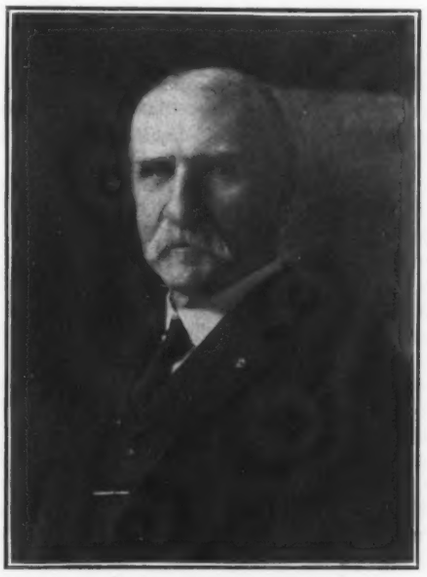
The anchors also will be of bronze. There is some doubt as to whether the crank shaft in the engine can be constructed of this metal. If it should turn out that this piece must be of steel, it will be the only specimen of this metal employed on the entire vessel. The first voyage of the Carnegie will be to the north, visiting Hudson Bay and Greenland.

OBITUARY.

GEORGE M. LAUGHLIN.

Major George McCully Laughlin, Pittsburgh, died December 11, aged 66 years. He was a son of James Laughlin, who, with the late B. F. Jones, founded the business now conducted by the Jones & Laughlin Steel Company. The Civil War interrupted his student life at Washington and Jefferson College and he enlisted in the Union army as a private. Immediately thereafter he was commissioned second lieutenant, although not 20 years old, and began active service with the Army of the Potomac, participating in every engagement until the end at Appommatox, and by his bravery winning steady advancement, being mustered out as brevet major.

Returning from the war, Major Laughlin entered the firm of Jones & Laughlins. His active participation in its affairs continued for 35 years, his retirement as vice-chairman of the board in 1900 marking the beginning of the period of comparative leisure in which he indulged himself as the evening of life came on. For nearly two decades he was secretary and treasurer of the old firm of Jones & Laughlins, Ltd., retaining that position until the reorganization of the concern as the Jones & Laughlin Steel Company, of which he was a director and one of the Advisory Board at the time of his death. During all these years he was a power in the steel world, as the deaths of the founders, the elder Laughlin and Jones,



GEORGE M. LAUGHLIN.

threw the burden of the business on the second generation. He was liberal in his charities and benefactions, having been particularly generous to Washington and Jefferson College. He was president of the Keystone National Bank, director of the Pittsburgh Trust Company and other financial institutions and a member of the Duquesne, Pittsburgh and Union clubs, Pittsburgh Golf Club, National Arts Club and Strollers' Club of New York, and Manufacturers' Club of Philadelphia. He was also a member of the Grand Army of the Republic, the Loyal Legion and Sons of the Revolution. He leaves three sons—Thomas K., assistant treasurer of the Jones & Laughlin Steel Company; George M., Jr., superintendent of the company's Soho Mills, and Irwin B., Charge d'Affaires at the American Embassy, Athens.

PERCY COLEMAN HAMILTON, an expert in the manufacture of fireclay devices, until recently a resident of Pittsburgh, died December 9 in the Manhattan State Hospital for the Insane, where he had been confined for three weeks. He was born in Dunkirk, N. Y., 44 years ago. Among other corporations in which he was interested were the Atlas Clay Material Company, of which he was president; the United States Clay Mfg. Company, of which he was vice-president, and the National Fireproof Brick Company, in which he was a director.

WARREN E. HILL, president of the Continental Iron Works, Greenpoint, Brooklyn, died suddenly December 8 of heart disease at the Florence Hotel, New York, aged 74 years. He was born in New York. He was a member of the Brooklyn Union League Club, the Society of Naval Architects and Marine Engineers, and the American Society of Mechanical Engineers. He leaves a widow and two daughters.

KENTON CHICKERING, vice-president of the Oil Well Supply Company, Pittsburgh, died at his home in Oil City, Pa., December 9, of paralysis, aged 61 years. He was born in Worcester, Mass., and had lived in Oil City since 1873. He leaves a widow, one son and three daughters.

PERSONAL.

At a recent meeting of the Board of Directors of the St. Louis Car Wheel Company, Allen Gray was elected president, succeeding John W. Nute, whose death was announced a few weeks ago, and John J. Morse was elected manager.

George F. Knapp, formerly with Oglebay, Norton & Co., Cleveland, who more recently established an office in the Citizens' Building, Cleveland, will represent the iron ore selling firm of E. N. Breitung & Co., Marquette, Mich. The firm is composed of persons connected with the Breitung ore interests on the Marquette range.

G. C. Lloyd, who has been secretary of the Institution of Electrical Engineers, has been appointed secretary of the Iron and Steel Institute to succeed the late Bennett H. Brough. L. T. Sidney continues as assistant secretary. The council of the institute is raising a fund of £5500 for Mr. Brough's widow and children.

Joseph W. Wilson, superintendent of the Springfield Drop Forge Company, Springfield, Mass., has resigned for the purpose of recuperation from the strain of directing the operations of the reorganized company.

James H. Dooley has been elected a member of the Executive Committee of the Sloss-Sheffield Steel & Iron Company, to fill the vacancy caused by the death of Joseph Bryan. Harry Bronner was elected a director, also to fill a vacancy.

Henry M. Lane, editor of *Castings*, Cleveland, Ohio, has resigned as secretary of the Foundry Supply & Machinery Association, the organization which holds expositions of foundry appliances and machinery in connection with the annual conventions of the American Foundrymen's Association. Mr. Lane's successor is C. E. Hoyt of the Lewis Institute, Chicago.

Prof. William Kent, formerly dean of the L. C. Smith School of Applied Science of Syracuse University, Syracuse, N. Y., has been appointed general manager of the Sandusky Foundry & Machine Company, Sandusky, Ohio.

George M. Galt, Ashmont, Mass., who has been connected with several large manufacturing concerns in this country for many years, will sail about January 1 for England and the Continent, where he will represent American machinery manufacturers as sales engineer.

Herbert E. Stone has just become connected with the Dearborn Drug & Chemical Works as Eastern manager of sales, with headquarters in New York City. He was recently manager of the Pittsburgh office of the Chapman Valve Company.

James H. Collingham, formerly of the American Locomotive Company, is now traveling for the Standard Machinery Company, Providence, R. I.

The announcement has just been made that Dr. William H. Wahl has been forced by ill health to resign the secretaryship of the Franklin Institute of Philadelphia, an office which he has filled with self-sacrificing devotion for many years. The Board of Managers being unable to find at the moment any candidate who is able to give the work his whole time at the compensation which could be offered have decided to recommend the election of James Christie, the well-known engineer so long identified with the Pencoyd Works. Mr. Christie consents to give, without compensation, as much of his time as he

is able to afford from other interests. Alfred Rigling, the librarian, will continue in his position as assistant to the secretary during Mr. Christie's incumbency.

George Bainbridge, formerly assistant superintendent of the structural department of the Jones & Laughlin Steel Company, Pittsburgh, has resigned to accept the position of sales agent for the Standard Bridge Tool Company, Pittsburgh, Pa.

The French Minette Ore District.

One of the striking features in connection with the development of the French steel industry during the past decade has been the growing appreciation and the utilization of the minette ore deposits, of which France has a share. The minette ore deposits of Luxemburg, Lorraine and the contiguous territory in France are now recognized as the basis of the most promising steel districts of the Continent. They are steadily gaining ground, and are the most dangerous competitors not only of the other continental fields, but also of Great Britain and the United States, in the world's markets.

What progress has been made in that part of the field which lies within the boundaries of France is well shown in the report of the chief engineer of mines of the department of Meurthe-et-Moselle for 1907. In the Longwy District mining has been carried on, and iron manufacture has been followed for many years, but it was only after the Germans on their side of the line and in Luxemburg had demonstrated what could be done with modern methods of steel manufacture that the French fell into line.

The French minette deposits are grouped in three districts—the older Longwy, the Briey and the Nancy. The following table summarizes the principal data relative to output for the two years, 1906 and 1907:

	Number of workmen.		Production of ore. Metric tons.		Yield per man per year.—Tons.	
District.	1906.	1907.	1906.	1907.	1906.	1907.
Nancy	2,383	2,637	1,682,440	1,916,585	706	730
Longwy	1,805	1,805	2,242,553	2,196,579	1,242	1,217
Briey	3,708	5,732	3,114,220	4,126,075	826	719
Quarries	330	350	359,716	498,822	1,038	1,417
Totals	8,286	10,524	7,398,929	8,738,061	893	830

The quarries are all located in the Longwy District, the principal center of production being Hussigny, with 452,357 tons product in 1907, as compared with 311,251 tons in 1906. The mines are very largely controlled and operated by furnace companies and steel works, there being in the Nancy District the Pont-a-Mousson, Maxeville, Montataire, Denain-Anzin Pompey, Nord et Est and Chatillon-Commentry companies; in the Longwy the Raty-Saintignon, Longwy, Godbrange, Tiercelet and Micheville companies, and in the Briey the Wendel, Marine, Pont-a-Mousson, Moutiers, Longwy, Micheville and Nord-et-Est companies. The leading producers are the Société de Pont-a-Mousson, with 1,039,237 tons in 1906 and 1,152,923 tons in 1907; the Aciéries de la Marine, with 1,059,182 and 1,180,977 tons, respectively; the Société de Micheville, with 483,596 and 652,237 tons; Longwy, with 586,452 tons in 1906 and 658,576 tons in 1907, and a participation with the Providence Company in 334,275 and 312,359 tons, respectively, in the Hussigny underground workings; the Société du Nord et de l'Est, with 343,477 tons in 1906 and 509,976 tons in 1907, and the Société de Moutiers, with 483,783 and 619,247 tons, respectively. De Wendel & Cie, who are such large producers on the other side of the border, in Lorraine, mined in France in 1907 354,548 tons of ore. The Société de Chatillon-Commentry et Neuves-Maison increased its production from 409,290 tons in 1906 to 540,171 tons in 1907.

The average yield per man, which is high, is based upon the whole number employed above and below ground. In the Nancy District, in 1907 there were employed 2123 underground and 516 on the surface; in the Longwy, 1519 and 286, respectively, and in the Briey, 4011 and 1721 men, respectively. In the latter district this includes 139 men underground and 379 men on the surface at mines still under development. The men underground are generally paid under contract, their wages fluctuating between 5.50 francs and 10 francs; surface men get from 3.50 to 6 francs. The highest wages are paid in the Briey and Longwy districts, those in the former being about 20 per cent. above those of the Pas-de-Calais coal region.

Since the greater part of the ore is utilized by the mining companies in their own furnace plants, the sales in the open market do not deal with more than a small fraction of the total production. The valuation of the ore is made with the greatest care in determining the taxes. In 1906 prices ranged between 3 and 5 francs in the Nancy District. In the Longwy District the average price of ferruginous limestone was about 2 francs and that of the ore proper 3.5 francs. In the Briey District the limy, rich ore from the gray bed was estimated at 4.60 to 6 francs, according to the percentage of iron. The rising tendency continued in 1907, and it is probable that the tax valuations will show an increase of 10 per cent.

Costs have changed very little. The following average figures may be accepted for mines in regular, normal operation: Nancy, 3.25 francs; Longwy, 2 francs; Briey, direct cost, 2.50 francs. For the Briey District general costs must be added, which are large on account of the heavy flow of water and the large preliminary outlays for developing and equipping the mines for operation. On the average, the total of these fixed charges for each of the mines in the Briey District when in normal operation may be estimated at 1,000,000 francs for each per year.

The Alfred E. Norton Company.—The boiler works at Boonton, N. J., formerly occupied by the New Jersey Boiler Company, has recently been sold to the Alfred E. Norton Company, a New York corporation. The Norton Company will immediately make a number of changes in the plant, and will very shortly by installation of new machinery and equipment have it fitted to turn out both plate and structural work. It is the intention of the company to have its plant, both in equipment and transportation facilities, second to none in the country for its size. The Norton Company has an extensive structural and erection business, some of its recent important work being the building at 1 Wall street, New York, a skyscraper known in the trade as having its 18 stories of structural steel erected in 21 working days; the new Liberty Street Terminal in New York for the Central Railroad of New Jersey; the installation of the armor plate vaults for the Carnegie Trust Company, New York, and the new State Armory at Hartford, Conn. Mr. Norton, president of the company, has been actively engaged in the iron and steel business for over 30 years, having been associated with the Hecla Iron Works and with Post & McCord before going into business for himself. Mr. Shafer, who is in charge of the technical department, is a graduate engineer and a specialist in his line of work, well known in the New York trade. The financial department of the company is under charge of Mr. Bradley, who is a member of the New York and New Jersey bars, and who for the last 10 years has been associated in a financial capacity with building corporations.

The firm of Harding & Lesser, manufacturing agricultural implements at the works of the Modern Structural Steel Company, Waukesha, Wis., has made arrangements whereby after January 1, it will manufacture its products at the works of the A. W. Stevens Company, Marinette, Wis.

The Arthur Koppel Company, Pittsburgh, Pa., has given the Jeffrey Mfg. Company, 1711 Tremont place, Denver, Colo., the agency in the State of Colorado for the sale of its portable track, industrial railroads, cars of all kinds, including mine cars, rails, switches, turntables, &c.

The Pittsburgh & Lake Erie Railroad has placed an order with the American Locomotive Company for five 10-wheel passenger locomotives, which will be built in the Pittsburgh Works and will be delivered about April 1.

NEWS OF THE WORKS.

Iron and Steel.

The Silver Creek Furnace Company, Rome, Ga., has been incorporated, with a capital stock of $70,000, by Thomas J. Deane, T. W. Lipscomb and H. L. Campbell to manufacture pig iron, coke, charcoal, wood alcohol, &c. The company will operate the plant formerly known as the Rome Furnace and expects to place the furnace in operation in January.

The Mississippi Valley Iron & Steel Company, St. Louis, Mo., has been formed with a Missouri charter and a paid up capital of $1,500,000 by H. F. Albers, who has offices in the Singer Building, New York, and others, for the purpose of operating iron ore properties in Missouri and establishing a blast furnace in the vicinity of St. Louis. The company is planning to build a 250-ton furnace at first, and will make further extensions later on. Mr. Albers is at present in St. Louis, but is expected in New York within two weeks.

General Machinery.

The Hartman & Nelson Machine Company, Green Bay, Wis., has been succeeded by the Hartman, Nelson & Zapfe Company, which, in addition to general machine work, will build and repair boilers, fabricate structural material and do sheet metal work. To provide additional shop room the old plant of the Straubel Machine Company has been secured, in which new machinery will be installed. A new 175-ton hydraulic press has been added to the equipment.

In order to provide facilities for taking care of its expanding business the Louden Machinery Company, Fairfield, Iowa, is adding to its plant a new brick factory building 72 x 140 ft., two stories. One floor of this addition is designed to relieve the crowded condition of work in the main factory, while the other will be used for the storage of goods and shipping department. The remaining floor will accommodate one or two manufacturing departments, besides furnishing storage for made up goods awaiting shipment. The increased space thus provided will not only enable the company to increase its output as occasion demands, but will insure promptness in the execution of orders.

With a paid up capital of $6000, the Holloway Mfg. Company, Ottumwa, Iowa, has been organized to manufacture tools. The officers of the company are N. B. Holloway, president and treasurer; A. S. Holloway, secretary, and C. S. Britt, vice-president.

The Columbia Machine & Furnace Company, Columbia, Miss., has awarded contract for the erection of its new plant to replace that recently destroyed by fire. There will be a brick foundry, 50 x 60 ft.; machine shop, 56 x 136 ft.; boiler room, forge shop and iron storage buildings, 26 x 62 ft. The new buildings will cost about $25,000.

McDougall Hawkes has been appointed receiver for the Sherman, Brown, Clements Company, New York, dealer in machinery. The liabilities are said to be $45,000 and assets $15,000.

The Germantown Tool Works, Philadelphia, Pa., is erecting a three-story building, 60 x 80 ft.

The Elizabeth City Iron Works, Elizabeth City, N. C., J. F. Sanders & Sons, proprietors, has incorporated under the same name, with a capital stock of $100,000, and will continue to do a general machine, foundry and supply business. The directors are J. F. Sanders, Brad Sanders, H. W. Sanders and Andrew Sanders.

The Keystone Driller Company, Beaver Falls, Pa., manufacturer of the Pennsylvania well drilling machines and Downie deep well pumps, states that while its business is not up to normal, it seems to be of a staple character and is largely in advance of conditions prevailing at the corresponding time a year ago. A slow but steady improvement in orders is observed.

Power Plant Equipment.

Bonds in the sum of $20,000 have been voted by the town of Hooker, Okla., for the construction of a municipal electric light and water works plant, which it is expected will be completed and ready for operation on or before May 1, 1909. The town of Hooker has a population of but 700, and will claim the distinction of being the smallest town in the new State having a complete water works and electric lighting system.

The Yamhill Electric Company, Newberg, Ore., will enlarge its boiler plant by the installation of an additional boiler with a capacity of 250 hp. under 150 lb. working pressure. This unit will be equipped with an automatic sawdust feed.

The Bruce-Meriam-Abbott Company, Cleveland, Ohio, has recently received the following contracts: Two 125-hp. vertical four-cylinder natural gas engines to be shipped to Salamanca, N. Y.; one 125-hp. producer gas engine, McHenry, Ill.; one 135-hp. producer gas engine, Milwaukee, Wis.; one 135-hp. engine, Willard Storage Battery Company, Cleveland, Ohio; one 55 and one 15 hp. engine, Corpus Christi Church, Buffalo, N. Y., and one 27-hp. engine, Starr Plating Works, Buffalo, N. Y.

The Westinghouse Electric & Mfg. Company, Pittsburgh, has received a contract from the Spreckels Sugar Refining Company, Philadelphia, for a complete electric power plant. It will consist of two 900-hp. turbines and generators, 12 75-hp. motors, switchboard and complete apparatus for a modern power plant. The company has received an order from the Menominee & Merionette Power Company for the electrical equipment for a large power plant in Michigan.

The Syracuse Cold Storage Company, H. K. Chadwick, president, Syracuse, N. Y., has retained consulting engineer W. C. Jarvis, 126 West Eleventh street, Indianapolis, Ind., to prepare plans for a fireproof steel frame cold storage building which it will erect at North West street and the Erie Canal. The main building will be seven stories, 84 x 90 ft., with a detached power house building, one story, 40 x 60 ft., of steel frame and brick construction. The owner is now receiving bids on the following equipment: Two 100 hp. horizontal tubular boilers, one 100-ton direct engine driven ice machine, boiler feed pump, a large number of metal tanks for ice making, overhead track and conveying system, several small cranes for handling ice.

Foundries.

Under a reorganization, the Union Foundry & Machine Company, Mansfield, Ohio, has been incorporated to take over the plant of the Union Foundry & Machine Works, and has also acquired the rights of the Mansfield Foundry Company, lessees of the foundry end of the plant, which it will operate in conjunction with the remainder of the works. Among the orders booked by the new company is one for furnace castings of considerable tonnage from the National Sheet Steel Company.

The Kutztown Foundry & Machine Company, Philadelphia, Pa., has decided to make a number of improvements to its plant at Kutztown, Pa., the details of which have not yet been worked out. Considerable new machinery will be installed, all of which has been purchased.

Fires.

The municipal electric light plant at Olney, Ill., was recently destroyed by fire, the loss being estimated at $25,000.

The ice making and refrigerating plant of the Althoff Mfg. Company, Denver, Colo., was damaged $10,000 by fire December 9.

Bridges and Buildings.

The Milwaukee Bridge Company, Milwaukee, Wis., has been awarded the contract for the erection of the Twentieth street viaduct at Denver, Colo. The viaduct will be built by the four railroad companies whose tracks it crosses, and will be a little less than a mile in length, 28 ft. high, with a roadway of 45 ft. It is to be completed in 10 months at a cost of $300,000. The contract was awarded in open competition with bridge companies from all parts of the country.

Hardware.

The Dairy Queen Separator Company, Lebanon, Ind., has increased its capital stock from $65,000 to $115,000.

The Supreme Mfg. Company has been incorporated at Vincennes, Ind., with $60,000 capital stock, to manufacture hay presses, corn huskers, &c. The directors are Joseph B. Gearhart, S. H. Boles and Charles E. Williams.

The Victor Mfg. Company, Leavensworth, Kan., has been newly incorporated, with a paid in capital of $40,000. Since its loss by fire on September 12 the company has not only repaired the damage thus occasioned, but has made additional improvements by which the capacity of its factory has been greatly increased. The recognized merit of its Wonder washer and wringer and other products is reflected in a growing demand which has necessitated facilities for increasing the output.

Miscellaneous.

The New Process Raw Hide Company, Syracuse, N. Y., manufacturer of new process pinions and cut gears of all kinds, has under construction an addition to its plant, 60 x 80 ft., two stories and basement, of brick and steel, which will increase the available floor space by over 13,000 sq. ft. The new building will cost complete from $25,000 to $30,000, and machinery for its equipment, to be delivered during the next two months and consisting principally of automatic turret machines, beveled geared planers and grinding machines, has been purchased at a cost of about $12,000. An additional hardening furnace for treating automobile transmission gears and drive gears will also be installed. The company has been operating its plant nights for two months and has at the present time the largest pay roll in its history, business coming in faster than it can be taken care of advantageously in the present plant. The new building is expected to be ready for operation early in February.

The Wonder Automobile Company, Kansas City, Mo., has secured a factory building at 4116 Penn street, which is being fitted up for the manufacture of automobiles. The company was recently incorporated with a capital stock of $35,000. Those actively interested are C. F. Ettwein and H. N. Strait. Several styles of cars will be manufactured, among which will be one known as the Kansas City Wonder. Some of the parts will be manufactured outside, and it is expected that the first year's output will amount to about 200 cars.

In order to improve its position and facilities for supplying the demand for steel grain bins and steel road culverts in the wheat raising territory of the Northwest, the Butler Mfg. Company, Kansas City, Mo., is locating a factory in Minneapolis, Minn. In addition to the specialties referred to, the company

is making galvanized iron stock tanks and a line of similar products.

The Buffalo Metal Furniture Company, Buffalo, N. Y., manufacturer of steel wire furniture and other metal furniture, now located in the Ross Manufacturing Building, Niagara street, has purchased a site at Niagara street and Bird avenue and will erect and equip a two-story brick factory early the coming year. Wm. H. Thompson is manager.

The Grabowsky Power Company has been incorporated at Buffalo, N. Y., to manufacture automobiles and commercial power wagons and trucks. Factory premises are being arranged for. James D. McDonald is president.

Halven O Sageng, Dalton, Minn., and capitalists of Minnesota and North Dakota have organized a company with a capital stock of $1,000.000 to manufacture a new type of threshing machine, the invention of Mr. Sageng. The machine consists of a 48-hp. four-cylinder gasoline engine built into the front of a separator so as to form a part of it and furnish the power both for threshing and to propel the machine. The company will construct a new plant at Minneapolis.

The Engineers' Specialty Company, Kansas City, Mo., recently incorporated, has taken over the business of the Armstrong, Menczer Mold & Metal Company of Kansas City and the Ray Purifier Company of Wichita, Kan. It is the intention in the spring to erect a plant for the manufacture of flue cleaners, turbine cleaners, lubricators, metallic packing and the Ray water purifier. The company has practically all the machinery needed for the present. J. George Brinkman of the J. V. Brinkman Company is president; James A. Ray, secretary; H. A. Ruggles, vice-president; James Armstrong, treasurer and manager, who with Edward Menczer and C. A. Thompson constitute the Board of Directors.

The Youngstown Car Mfg. Company, Youngstown, Ohio, builder of cars for industrial purposes, has had a large business and has filled contracts for steel cars during the year as follows: Carnegie Steel Company, 100 open hearth charging box cars, 24 slag cars, 4 ore scale cars and 3 skip cars; Pittsburgh Steel Company, 100 open hearth charging box cars; Cambria Steel Company, 9 large ingot cars; Monongahela River Consolidated Coal & Coke Company, 400 all steel mine cars. The company has received an order for six steel flat cars for use in the new Erie Barge Canal, and is the lowest bidder on two large wooden box cars for the United States Navy Yard at Philadelphia and 40 steel derrick skips for the Isthmian Canal work at Panama.

The Southern Attitude Toward Railroads.

The Southern Commercial Congress, with delegates representing 64 commercial organizations in 14 Southern States, assembled in Washington on December 8, unanimously and with enthusiastic applause passed the following resolution, expressing its attitude toward railroads:

"Railroad construction has been extensive, but the rapid commercial growth of the South requires an enormous increase in its railroad facilities to transport to market its many and varied products. The construction of such adequate facilities can be accomplished only by assuring the holders of capital that such enterprises will be safeguarded by conservative and constructive legislation, and we urge upon our Southern legislatures the wisdom of such policy and condemn any agitation leading to the contrary. We favor a spirit of co-operation between the people and railroads and other corporate interests, to the end that the required confidence of investors may be established in the securities of the corporations of the South."

Further proof of an aroused sentiment at the South favorable to conservative railroad legislation was found in the spontaneous applause given the addresses of John F. Wallace, the well-known expert in railroad construction, and James E. Smith, president of the St. Louis Business Men's League, who both advocated an attitude on the part of the public and of the legislators which may tend to reassure investors and promote railroad extension.

The No. 2 furnace of the Ohio Works of the Carnegie Steel Company, Youngstown, Ohio, which was blown in November 30, had been idle for five months for relining and repairs. Three of the four furnaces at this plant are now in operation. The fourth stack is being relined and repaired and will be ready for blast in a short time.

No More Wire Dumping in Canada.

TORONTO, December 12, 1908.—The Canadian Department of Customs has instructed collectors to apply the antidumping duty to barbed wire, to galvanized wire of gauges Nos. 9, 12 and 13, and to wire rods. These articles are on the free list, and it has not heretofore been deemed advisable to subject them to the antidumping duty.

Originally this special duty was confined to commodities on the dutiable list, but in the last revision of the tariff it was extended to articles on the free list. Subsection 6 of the antidumping clause provides, however, for the temporary exemption from this special duty of any class of articles not produced in Canada in substantial quantities, and not offered for sale to all customers on equal terms. Barbed wire, galvanized wire and wire rods have up to the last few days been regarded as of this class. It was held that the home supply fell short of the capacity of the home demand. Hence no antidumping duty was being imposed upon them. If sellers from the United States chose to "slaughter" any of these products here, they could do so with impunity. As a consequence, the profits on the manufacture of these articles were not great for the Canadian makers. It is maintained that Canadian farmers get as cheap fencing wire as any agriculturists in the world. This advantage is a very material one for Canada's tillers of the soil, especially in the west, whose vast areas are being rapidly parceled out in fence wire inclosures.

In the fiscal year ending March 31, Canada's imports of barbed wire amounted in value to $572,760; of galvanized wire of the three gauges mentioned to $1,351,416; of wire rods not exceeding ⅜ in. in diameter to $295,122. All but a comparatively small part of these imports came from the United States. In the present fiscal year the imports of these articles would naturally tend to be much greater, for the Canadian West now has probably nearer thrice than twice the buying power it had a year ago. Last year the farmers had a short crop, much of it spoiled by frost, and the greater part of its merchantable quality blockaded by the early winter. This year the crop is abundant, the quality excellent, the price high, the transportation season unusually long, the service of and the railroads exceptionally good. Add to these conditions the fact that the demand for wire is this year a cumulative one, last year's demand being largely suspended for want of money, and it will be seen that the wire trade ought to be quite active in the West. What further favors the demand is the character of the immigration going into Canada's prairie regions. Though not up to the numbers of the year 1906, the immigrants entering the West this year are probably as well provided with funds as any body of newcomers that country has received in recent years. Very many of them are substantial Americans, who have both the special knowledge and the pecuniary means necessary to make success of farming large holdings in a prairie country.

This autumn the vessels carrying grain from Fort William and Port Arthur had a fair volume of return business from the lower lake ports, and package freight carriers handled a considerable tonnage of stuff from ports on the American side of the lakes. In this merchandise wire played a considerable part, and Canadian makers of wire were affected by the competition. They asked that the antidumping duty be imposed, but to give them the benefit of this impost and leave them free to import wire rods at bargain prices would be unfair to the Dominion Iron & Steel Company, which has a rod rolling mill. The antidumping duty was therefore applied both to the wire and to the rods.

The antidumping clause does not insist that the price to Canadian importers shall be actually as low as that current in the country of production. It is provided that the customs department may by regulation exempt from the antidumping duty any article offered in Canada at but a small percentage less than its fair market value. Accordingly the department provided by regulation that in respect of iron and steel, rolled, drawn or polished, the antidumping duty should not apply unless in cases where the import price is more than 5 per cent. below the fair market value. C. A. C. J.

The Iron and Metal Trades

Official announcement by the Pennsylvania Railroad has been made that the mills have been given their allotments for the 1909 requirements of the system, which are placed at a minimum of 135,000 tons, with the privilege of increasing them to a total of 160,000 tons. It is understood that at least in some instances delivery prior to March 15, 1909, has been asked and that a number of the mills are in an excellent position to meet this requirement. The allotment on the minimum basis is as follows: Illinois Steel Company and Carnegie Steel Company, 62,000 tons; Cambria Steel Company, 25,000 tons; Pennsylvania Steel Company, 25,000 tons; Lackawanna Steel Company, 13,000 tons, and Bethlehem Steel Company, 10,000 tons. In some cases the makers have been asked to furnish open hearth steel to the extent of one-half of the order. While all of the companies have open hearth plants, their location in the case of some of them is not convenient, the rail mills being in close proximity to the Bessemer plants. The Bethlehem Steel Company does not make any Bessemer steel at all.

The Chicago, Burlington & Quincy Railroad has placed its order for 40,000 tons, of which 10,000 tons go to the Colorado mill and 30,000 tons to the Steel Corporation. The latter tonnage is to be of Open Hearth Steel.

It is understood that other Rail orders of magnitude are pending.

Pig Iron makers report a good many inquiries for quotations, but many of them are supposed to be mainly from customers who want to get a basis for figuring inventories. Another buying movement is under way among the Basic Open Hearth Steel makers of eastern Pennsylvania. Transactions aggregating 15,000 tons have been made, and inquiries footing up to about 30,000 tons are at hand, nearly all for the second quarter. Buyers are holding out for about $16.50, delivered, while the lowest sellers are close to $16.75, with the majority asking $17, delivered, and upward.

One of the recent developments which affects the requirements of Basic Pig is the relatively high price at which Melting Scrap is being held. Steel makers are turning to a higher percentage of Pig Iron in their mixtures.

It is observed, too, that the demand for Low Silicon Foundry Iron is relatively large because founders find Cast Scrap scarce and relatively dear, and, therefore, needing less Scrap carrying capacity in their mixtures, are turning to lower Silicon Pig Irons.

The closing of contracts for Structural Material is proceeding slowly, the only large order placed being for 3900 tons for the Denver viaduct. Competition among fabricators and mill shops is sharp.

A larger percentage of Tin Plate capacity is operating now than for some time, and similar conditions prevail in the Sheet industry. A number of the largest Steel Bar plants are running very close to 90 per cent of capacity. The Steel Corporation has 57½ per cent. of its Pig Iron capacity at work, while its mills are operating at a rate estimated at 58 to 60 per cent.

Some good business is coming up for the Cast Iron Pipe makers on the Pacific Coast, otherwise work is not brisk. The only large order placed this week was for 7400 tons for Amsterdam, N. Y.

From Germany comes the report that a very large business followed the disruption of the Pig Iron Syndicate, at low prices. Since then the market has stiffened. Mail advices are to the effect that one sale of 20,000 tons of Spiegeleisen on American account was effected.

Ferrosilicon has strengthened considerably in the Pittsburgh market and higher prices are being realized.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Dec.16, 1908.	Dec.9, 1908.	Nov.18, 1908.	Dec.18, 1907.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	**$17.25**	$17.25	$17.00	$18.25
Foundry No. 2, Southern, Cincinnati	16.25	16.25	16.25	17.00
Foundry No. 2, Local, Chicago	17.00	17.00	17.00	18.25
Basic, delivered Eastern Pa.	**16.75**	16.75	16.25	17.25
Basic, Valley Furnace	15.50	15.50	15.50	....
Bessemer, Pittsburgh	**17.40**	17.40	16.90	19.90
Gray Forge, Pittsburgh	15.15	15.15	15.15	18.40
Lake Superior Charcoal, Chicago	19.50	19.50	19.50	23.50
BILLETS, &c., Per Gross Ton:				
Steel Billets, Pittsburgh	25.00	25.00	25.00	28.00
Forging Billets, Pittsburgh	27.00	27.00	27.00	30.00
Open Hearth Billets, Phila.	26.20	26.20	26.20	30.00
Wire Rods, Pittsburgh	33.00	33.00	33.00	34.00
Steel Rails, Heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	**15.50**	15.50	15.25	12.00
Steel Rails, Melting, Phila.	**17.50**	16.75	16.00	11.50
Iron Rails, Chicago	**19.50**	19.50	18.00	15.50
Iron Rails, Philadelphia	**21.25**	21.00	20.50	17.50
Car Wheels, Chicago	**16.00**	16.00	15.50	22.00
Car Wheels, Philadelphia	16.00	16.00	16.00	19.00
Heavy Steel Scrap, Pittsburgh	**16.50**	16.50	16.00	12.50
Heavy Steel Scrap, Chicago	15.00	15.25	15.00	11.50
Heavy Steel Scrap, Philadelphia	**17.50**	16.75	16.00	11.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia.	**1.52**	1.50	1.47	1.75
Common Iron Bars, Chicago	1.50	1.50	1.50	1.75
Common Iron Bars, Pittsburgh.	**1.50**	1.50	1.40	1.55
Steel Bars, Tidewater, New York	1.56	1.56	1.56	1.76
Steel Bars, Pittsburgh	1.40	1.40	1.40	1.60
Tank Plates, Tidewater, New York	1.76	1.76	1.76	1.86
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.70
Beams, Tidewater, New York	1.76	1.76	1.76	1.86
Beams, Pittsburgh	1.60	1.60	1.60	1.70
Angles, Tidewater, New York	1.76	1.76	1.76	1.86
Angles, Pittsburgh	1.60	1.60	1.60	1.70
Skelp, Grooved Steel, Pittsburgh	1.45	1.45	1.45	1.70
Skelp, Sheared Steel, Pittsburgh.	1.50	1.50	1.50	1.80
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, Black, No. 28, Pittsburgh	2.50	2.50	2.50	2.60
Wire Nails, Pittsburgh	1.95	1.95	1.95	2.05
Cut Nails, Pittsburgh	1.75	1.75	1.75	2.00
Barb Wire, Galv., Pittsburgh	2.40	2.40	2.40	2.50
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	14.50	14.50	14.50	13.00
Electrolytic Copper, New York.	*14.12½*	14.12½	14.25	12.62½
Spelter, New York	**5.20**	5.15	5.05	4.25
Spelter, St. Louis	**5.05**	5.00	4.90	4.15
Lead, New York	*4.25*	4.27½	4.42½	3.50
Lead, St. Louis	*4.10*	4.15	4.30	3.35
Tin, New York	*29.10*	29.10	30.25	26.10
Antimony, Hallett, New York	8.12½	8.12½	8.12½	8.50
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	$3.89	$3.89	$3.89	$4.09

Chicago.

FISHER BUILDING, December 15, 1908.

Nothing of a nature calculated to arrest permanently the trend toward betterment observed in the Iron and Steel market has developed. Some lines, it is true, are feeling the effects of seasonable dullness, but this is usually the case toward the end of the year, when there is always more or less relaxation from the strenuous efforts to press for business. Hopeful views are entertained for a gradual restoration of normal trade conditions, and after the short respite afforded by the holidays the energies of all industrial interests will be bent to this end. Some desultory talk of the proposed tariff revision is heard, but the general opinion seems to be that whatever action is taken will not directly affect business until late in the year, at least. The influence of the increased capacity for Open Hearth Rail production provided by the nearly completed Gary mills is foreshadowed by the specification of Open Hearth sections for the 90-lb. Rails placed last week by the Chicago, Burlington & Quincy Railroad with the leading interest. A part of the 40,000 tons comprised in this order, however, went to the Colorado Fuel & Iron Company. One or two of the new Gary blast furnaces will probably be blown in either the latter part of this week or the first of next, and work on the finishing mills is practically completed, so that the making of Steel can be begun within a very short time if desired. Nothing of exceptional interest in the way of fabricating contracts was included in the week's transactions, which were

comprised mainly of small orders for various kinds of Structural work. There is not much doing in Plates, and the demand for Sheets has eased off somewhat in sympathy with seasonable influences. Pipe and Tubes are also quiet, but Steel Bar specifications continue to come out in satisfactory volume. A halt in the bullish tendency of Scrap material is one of the week's developments, though in the estimation of leading consumers this impairment of strength is likely to be of only temporary duration. Trading in Pig Iron is confined practically to small lots of Foundry Iron for first quarter and first half delivery. There is a notable scarcity of off grade Iron due chiefly to recent heavy purchases by the Cast Iron Pipe founders.

Pig Iron.—No movement has developed in the past week to lift the market out of the rut of dullness into which it fell after the enlivening streak of activity ending about the last week of November. The largest transaction reported for last week involved the transfer of 2000 tons by a leading Southern producer, who booked in all 2500 tons, at $13, Birmingham, for first half delivery. This price apparently represents the minimum obtainable from Southern furnaces for this period, and some producers in that district are not willing to cover shipments beyond the first quarter at this figure, asking either $13.50 for second quarter, or $13.25 for the full first half. One lot of 150 tons was placed at the former figure for first quarter alone. Buying is now closely limited to small lots, and the orders entered are mostly from the smaller melters. More of these are going to the local furnaces than elsewhere. This is due to the slight differential in their favor, at $17, furnace, which is now the established first quarter price. It would also doubtless apply to deliveries through first half on desirable tonnage, but on the general run of such business $17.50 is asked. There is a good deal of inquiry in the market for forward tonnage, indicating the existence of uncovered requirements up to next July. Not less than 10,000 tons are included in known inquiries of this character now under consideration. In this amount there are several for 1000 tons each. As the situation now stands, neither consumers nor producers are anxious to make commitments extending into the second half, and while there have been a few inquiries for iron that far ahead, they do not seem to have been prompted by a serious purpose to buy. At all events, there are no prices named by any of the producers, North or South, covering that period. The following quotations are for December delivery, f.o.b. Chicago:

Lake Superior Charcoal	$19.50 to $20.00
Northern Coke Foundry, No. 1	17.50 to 18.00
Northern Coke Foundry, No. 2	17.00 to 17.50
Northern Coke Foundry, No. 3	16.50 to 17.00
Northern Scotch, No. 1	18.00 to 18.50
Southern Coke, No. 1	17.85 to 18.35
Southern Coke, No. 2	17.35 to 17.85
Southern Coke, No. 3	16.85 to 17.35
Southern Coke, No. 4	16.35 to 16.85
Southern Coke, No. 1 Soft	17.85 to 18.35
Southern Coke, No. 2 Soft	17.35 to 17.85
Southern Gray Forge	15.85 to 16.35
Southern Mottled	15.60 to 16.10
Malleable Bessemer	17.00 to 17.50
Standard Bessemer	17.90 to 18.40
Jackson Co. and Kentucky Silvery, 6 %	19.90 to 20.40
Jackson Co. and Kentucky Silvery, 8 %	20.90 to 21.40
Jackson Co. and Kentucky Silvery, 10 %	22.90 to 23.40

Billets and Rods.—Except for carload orders and others of small tonnage, there is nothing of interest doing in ordinary Forging Billets. Some increase of activity in the car shops is having the effect of enlarging the demand for Axle Billets, the chief transaction in this line being an order for something over 1000 tons taken by the principal interest. On what business there is moving, prices, we are advised, are maintained on Forging Billets at $28.50, Chicago. In Wire Rods the situation is unchanged, both as to price and demand, and we quote as follows: Bessemer, $33; Basic, $34; Chain, $33, all at Pittsburgh.

Rails and Track Supplies.—The first to be placed of the 1909 Rail tonnage for Western roads now pending in the market was 40,000 tons taken last week by the Chicago, Burlington & Quincy, the order being divided between the principal interest, and the Colorado Fuel & Iron Company. These Rails are to be of the 90-lb. American Association type A section, and the Eastern tonnage will probably be rolled by the Gary mills. While about 1500 tons of Open Hearth Rails were recently rolled in the South Works, this plant is not fitted under ordinary conditions to roll Open Hearth sections, and such work would hardly be undertaken there with the Bessemer department in full operation. No further information is obtainable respecting other contemplated purchases which are under negotiation. Although no new business of importance has developed in Spikes and Bolts and other Rail fastenings, specifications against those already placed are being offered freely enough to keep the Joliet plants going at a good rate. Within the last three weeks contracts for 200,000 kegs of Spikes and 100,000 kegs of Bolts have been secured by the Illinois Steel Company, but there is a dearth of orders for Angle Bars and Tie Plates. Thus far this month, the same interest has entered orders for 3000 tons of Light Rails, and while the prospects are that the total bookings for December will fall short of the previous month, this trade, for the season, is regarded as satisfactory rather than otherwise. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.25c., base, Square Nuts, and 2.30c. to 2.40c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $26; 20-lb., $27; 16-lb., $28; 12-lb., $29. Standard Sections, Bessemer, $28; Open Hearth, $30, on lots of 500 tons and over; on smaller lots, $2 a ton extra.

Structural Material.—Since the letting, last week, of the general contract for the construction of the Chicago City Hall, involving 11,000 tons of Structural Shapes, the placing of the fabricating contract is being awaited with a good deal of interest by those concerned in such work. As far as can be learned, no steps have been taken in this direction by the contractors, and it is not known if immediate action is contemplated. The Denver viaduct work, which has been held up for some weeks pending negotiations between the city of Denver and the railroads, by whom it is to be jointly constructed, has been finally placed with the Milwaukee Bridge Company, which will fabricate the 3900 tons required. The general contract for the Main street viaduct, Kansas City, Mo., 709 tons, was let to A. M. Blodgett & Sons, who will place the order for fabrication. Instead of carrying out its plans for the construction of the Vendome Hotel, Chicago, the McCormick Estate is said to have substituted therefore the erection of an office building, material bids for which, it is expected, will be invited within a few weeks. Bids are now in on 1000 tons for an 11-story office building at South Bend, Ind., to be erected by the Studebaker Brothers. Offers are also in and being considered on 3000 tons for the new plant buildings of the Crane-Best Company, Pittsburgh, plans for which were prepared by a Chicago architect, and an inquiry now in the market calls for 1000 tons to be used in the construction of the Hermitage Hotel, Nashville, Tenn. A fair run of small orders was entered during the week by the various fabricating interests, among which were 120 tons for the Sumner High School Building, St. Louis, Mo., taken by the American Bridge Company, and 75 tons for a new shop to be built by the Sheffield Bolt & Nut Works, Kansas City, Mo., which was secured by the Midland Bridge Company of that city. Specifications against railroad bridge contracts are coming in fairly well. The minimum of 11,000 tons contracted for by the Harriman lines is nearly all specified, and the requirements are expected to run to a maximum of more than double this amount. Enough plain material is coming to the mills to keep them steadily in operation. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

Plates.—Plates are dull, and but little work is developing requiring the immediate use of considerable tonnage. Boiler and Tank works have not yet felt the stimulus of demand which has increased activities in some other lines. Prices, however, are firmer and more regular, although moderate concessions from regular schedules have not entirely disappeared. We quote mill shipments as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

Sheets.—The present month is one, even under ordinary conditions, in which a sustained heavy demand is looked for. Within the past week or two the volume of new business has diminished slightly, and the prospects are that the movement will be moderate for the remainder of the year at least. Prices have not been disturbed by these conditions, and we are advised that regular quotations are in the main governing all transactions. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—Business in Steel Bars is practically normal as far as specifications are concerned. The fact that few new orders are being placed bears no particular significance, in view of the fact that the forward requirements of principal consumers are well covered by contracts. The Bay View mills are running practically full, except for the 21-in. mill, which is shut down for a few days for lack of Steel. Orders for Iron Bars are coming out about as they have been for several weeks past. A good many inquiries for Iron Bars for shipment through the first half of next year are in the market, but, on account of the relatively high level of Scrap values, the mills are at this time not eager to make commitments far ahead, at present prices, which, on current business are firm, and unchanged. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extras, Steel Bar card; Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

Merchant Pipe.—This market being dependent almost wholly upon the jobbing demand, a sluggish movement is naturally expected in the mid-winter months. This is emphasized just now by general industrial conditions, and the further fact that stocks are being held down to closest possible limits, until annual inventories have been taken. Buying is, therefore, restricted to small orders required to supply immediate needs. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, ¾ to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, ¾ to 6 in. About three points above these prices is asked for Iron Pipe.

Boiler Tubes.—A few carload orders for Merchant Tubes comprise the largest transactions noted for the past week. While contracts have been placed by the builders of threshing machinery for boiler construction through the coming season, few specifications against them have been received. There is a moderate demand for Locomotive Tubes, which in this section is limited to repair work. Mill quotations for future delivery, on the base sizes, are as follows: 2¾ to 4¼ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.	35	35	35
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 5 in.	60	47½	47½
6 in. and larger	50	35	..

Merchant Steel.—Routine orders of about the same character and volume that have been reported for several weeks past continue to represent the activity in Tire Steel and miscellaneous shapes included under this head. Shafting orders, though not as a rule of large size individually, are rather more plentiful, and regular discounts are being adhered to more closely. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to 1½ x ½ in., 1.73c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.08c., and 1⅛ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting in car lots and over, 57 per cent. off; in less than car lots, 52 per cent. off, with carload freight allowed within base territory.

Metals.—The lull in the demand for Copper which developed after the spurt of buying of a few weeks ago continues. Present conditions are not favorable to a renewal of vigorous movement, both because of a weakening tendency of price and a reduced consumption, incident to the winding up of the year's business. The new orders now being booked are principally for small lots, for immediate use. While the tone of the market is decidedly weaker, current prices are generally being maintained on what business is moving. Quotations are as follows: Casting Copper, 14¼c.; Lake, 14½c. to 14¾c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 31½c.; small lots, 34½c.; Lead, Desilverized, 4.45c. to 4.55c., for 50-ton lots; Corroding, 4.70c. to 4.80c., for 50-ton lots, in car lots, 2¼c. per 100 lb. higher; Spelter, 5.10c. to 5.25c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.; Heavy Copper, 13c.; Copper Bottoms, 11¾c.; Copper Clips, 13c.; Red Brass, 12c.; Yellow Brass, 9½c.; Light Brass 6¼c.; Lead Pipe, 4.35c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 26c.

Cast Iron Pipe.—No new lettings of any importance are up for consideration this week, except those mentioned in the last report, which will probably be closed within a day or two; these include 2000 tons for the city of St. Paul and 1500 tons for Indianapolis. It is understood that the requirements of the city of Chicago for Pipe actually needed amount to a large tonnage, but none of this will likely come into the market until the budget for the coming year has been made up by the Financial Committee of the City Council, which will probably not be before some time next month. The placing of an aggregate of about 14,000 tons required by the city of Detroit on which bids were rejected is still being deferred. On account of the higher prices now ruling on Pig Iron, foundries are maintaining a firmer attitude in quoting on spring deliveries. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., $27; 6 to 12 in., $26; 16 in. and up, $25, with $1 extra for Gas Pipe.

Old Material.—The comparatively heavy tonnage of Railroad Scrap offered in the market last week overtopped the moderate demand from consumers, with the result that some sagging of prices developed. As indicating the pulse of the market, the following sales of material included in these offerings show a lower range of prices than were realized on like grades the previous week: No. 1 Cast, $13.70; Spring Knuckles and Couplings, $14; Frogs, Switches and Guards, $15; Railroad Malleable, $14. Rerolling Steel Rails are easier, one lot of 1500 tons having been purchased by a mill interest on a basis of about $17, Chicago. A small lot of short lengths went at $15.50. A local Bar mill, using Iron Rails, Iron Fish Plate and Wrought, which has been idle since the first of the year, recently started up, and has been a buyer of these grades for the past 60 days, in which time about 6000 tons have been purchased. This, however, is far short of its normal requirements, but has helped to sustain the market on such material. If a period of quietness ensues as a result of lessened demand between now and January 1, the predictions of shrewd market operators will be verified. At the same time no permanent recession from present price levels is looked for, and in the meantime there is no pressure to sell from the extensive stores of yarded stocks which still are being resolutely held for a higher market. The following prices are per gross ton, f.o.b. Chicago:

Old Iron Rails	$19.50 to $20.00
Old Steel Rails, rerolling	17.00 to 17.50
Old Steel Rails, less than 3 ft.	15.50 to 16.00
Relaying Rails, standard sections, subject to inspection	22.50 to 23.50
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel Scrap	15.00 to 15.50
Frogs, Switches and Guards, cut apart	15.00 to 15.50
Mixed Steel	12.25 to 12.75

The following quotations are per net ton:

Iron Fish Plates	$17.50 to $18.00
Iron Car Axles	21.00 to 21.50
Steel Car Axles	18.50 to 19.00
No. 1 Railroad Wrought	14.50 to 15.00
No. 2 Railroad Wrought	13.50 to 14.00
Springs, Knuckles and Couplers	14.00 to 14.50
Locomotive Tires, smooth	14.75 to 15.25
No. 1 Dealers' Forge	11.75 to 12.25
Mixed Busheling	9.50 to 10.00
Iron Axle Turnings	8.50 to 9.00
Soft Steel Axle Turnings	8.50 to 9.00
Machine Shop Turnings	8.50 to 9.00
Cast Borings	7.50 to 8.00
Mixed Borings, &c.	7.50 to 8.00
No. 1 Mill	9.00 to 9.50
No. 2 Mill	8.00 to 8.50
No. 1 Rollers, cut to Sheets and Rings	10.50 to 11.00
No. 1 Cast Scrap	13.75 to 14.25
Stove Plate and Light Cast Scrap	12.25 to 12.75
Railroad Malleable	14.00 to 14.50
Agricultural Malleable	11.75 to 12.25
Pipes and Flues	11.00 to 11.50

Birmingham.

BIRMINGHAM, ALA., December 14, 1908.

Pig Iron.—The prospective orders at the time of last report have in but few cases materialized during the week just ended, and the aggregate of tonnage involved by transactions is comparatively small. There has been no change in quotations on early shipments, and a limited tonnage for such delivery is now being offered by one of the producing interests that has been practically out of the market for a month or six weeks past. Recent inquiries for strictly second quarter deliveries elicited a quotation of $13.50, Birmingham, for No. 2 Foundry, but no sales at such figures are among those reported. It is generally indicated that a schedule of $13.50 for second and third quarter deliveries will have been adopted by all makers when the demand has reached a definite form, although the theory has been advanced by parties thoroughly conversant with the situation that an additional sale of 10,000 tons for first quarter delivery would immediately be productive of an advance of 50c. per ton from prices now being asked. There is, apparently, no doubt that purchasers are more willing to meet the views of sellers than at any time since the slump in prices of a year ago, and the disposition to await the usual adjustment in all lines of foundry trades at the close of a year no doubt accounts for the market's present inactivity. The actual melt during recent months has hardly been equal to the engagements, and in some cases shipment against contract has been deferred as the result of accumulations

on the yards of founders; but in the majority of such cases reported the curtailment of foundry operations has been due to necessary repairs to equipment, which had been postponed from time to time by reason of the unsettled condition of the foundry trade. That the outlook for founders is promising is indicated in this district by the number of new concerns preparing to commence operations shortly after the beginning of the new year.

Cast Iron Pipe.—The condition of this market is practically unchanged. Producers are apparently more interested in effecting the delivery of tonnage already booked than in entering additional contracts, and, as is the case in other lines of foundry trades, are preparing for the annual inventory and summary of the year's operations. The improvement in prices has been maintained by recent transactions, and the fact that the largest interests have been compelled to cover for raw material requirements for some months' operations at prices now ruling substantiates the theory that still better prices for the finished product are soon to be received. The interest of Southern producers as to new orders is at present centered upon the Pacific Coast territory, for which a significant tonnage is expected to be required at an early date. We quote Water Pipe as follows, carload lots, per net ton, f.o.b. cars here: 4 to 6 in., $24; 8 to 12 in., $23; over 12-in., average $22, with $1 per ton extra for Gas Pipe.

Old Material.—Dealers authorize an advance in asking prices, and report a material improvement in the demand. No sales to consumers of larger proportions than carload lots are among those reported, but trading between dealers has been on a much larger scale. We note the offering by a local founder of approximately 250 tons of Light Cast and No. 1 Machinery, which will probable change hands during the coming week. Asking prices of dealers are revised as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$15.00 to $15.50
Old Iron Axles	16.00 to 17.00
Old Steel Axles	13.50 to 14.00
No. 1 Railroad Wrought	14.00 to 14.50
No. 2 Railroad Wrought	11.00 to 11.50
No. 1 Country Wrought	11.00 to 11.50
No. 2 Country Wrought	9.50 to 10.00
No. 1 Machinery	11.50 to 12.00
No. 1 Steel	10.50 to 11.00
Stove Plate and Light Cast	9.50 to 10.00
Cast Borings	5.00 to 5.50
Standard Car Wheels	13.50 to 14.00
Tram Car Wheels	12.00 to 12.50

San Francisco.

SAN FRANCISCO, CAL., December 9, 1908.

The month of November closed without bringing much new business to the Iron and Steel interests of the Pacific Coast, and so far this month transactions have been for the most part on a small scale. Orders have been placed for a moderate tonnage in some lines, and the total movement is considered to be about up to the average of the last few months, but it is not expected that many new orders will be placed from now until the close of the year. Upon the announcement of the increase in freight rates to take effect January 1, it was presumed that some of the local jobbers would make additions to their stocks in the meantime, but they are not doing so to any appreciable extent. No great confidence is placed in the efforts that are being made to prevent the advance, and it is understood that the difference will be borne by the consumer. Many new projects, which will call for a considerable tonnage of Iron and Steel, are now being talked of, but few inquiries are being received, and it is generally understood that little will be done upon them until the opening of the new year. While money is undobutedly becoming more plentiful, most of the loans are being placed for comparatively small construction work in the cities. The total movement of Structural Material in San Francisco is about as large as it has been for the last two months, but inquiries in general are for small lots. The foundries show increasing activity, but no inquiries are out for Pig Iron, the market for which remains dormant. The tonnage of Merchant Pipe moved so far this month is very fair, in comparison with recent records, though it is by no means normal. Most of the California railroads have sufficient supplies to cover their requirements for the remainder of the year, and show no disposition to place orders for future requirements. The movement of Merchant Steel, in a jobbing way, continues fairly active, though the local merchants have not yet begun to replenish their supplies.

Structural Material.—Fabricators of Structural Material find the demand for local use almost as large as it was during the early part of last month, and work is now being done on a number of contracts, nearly all of which, however, are individually unimportant. Few new transactions have been closed since December 1, and only one or two of the recent inquiries are for large amounts of material. The building record for last month is smaller than might have been expected, the total of building permits running nearly $750,000 behind that of October. The total of contracts for Steel framed buildings, however, is a little better than for October, though most of the structures were of small dimensions. The outlook for winter building is now considered rather better than it was earlier in the season. Most of the local fabricators are still fairly busy, but few contracts have been closed, calling for over 250 tons individually. The Pacific Rolling Mills Company is now working on a contract for about 150 tons of Steel for Holbrook, Merrill & Stetson's new warehouse. It has about finished the work on the University Club Building, for which a similar amount was used, and is working on a large number of smaller contracts, which altogether call for a considerable tonnage. A contract has been placed with the Llewellyn Iron Works for Steel for a six-story building for the Shiels Estate, at the corner of O'Farrell and Stockton streets, for $37,973. An eight-story Steel frame building is to be erected shortly at the corner of Grant avenue and Sutter street. Plans have been accepted for the one-story Steel and granite building of the London-Paris National Park. A contract has been signed for taking down the dome of the City Hall ruins, and the structure will be wrecked as fast as possible, though no plans have been definitely made for a new building to take its place. The local Lodge of Odd Fellows has secured a loan of $275,000 for the construction of a four-story building covering a lot 75 x 140 ft. at the corner of Seventh and Market streets. Contracts are in sight for a fair tonnage of concrete reinforcing material for buildings here and in other parts of the Coast, one of the largest being a 10-story structure projected in San Diego, Cal. A large amount of Steel is being used in the harbor improvements that are being made at San Francisco, plans for the new Pier 38, calling for approximately 400 tons of reinforcing Bars and nearly 1000 tons of Structural Shapes. Local fabricators, who are getting most of the small work, are still cutting prices, and a moderate tonnage of foreign Structural Material is being marketed here at low figures.

Pig Iron.—The local foundry situation continues to improve, though there has not yet been any corresponding improvement in the Pig Iron market. The demand for Structural Cast Iron is steadily increasing, some good sized lots being used in the low brick structures which are now being built. While few of the foundries, except those engaged in ornamental work, are operating to anything like their capacity, most of them have some contracts on hand for limited amounts of miscellaneous work, and their stocks of Pig Iron are diminishing much more rapidly than for many months past. Stocks are still larger than is desirable, however, and there is no immediate demand for ordinary grades. Foundries show no disposition to anticipate their future requirements, except when special inducements are offered. There is continual pressure to sell on the part of importers, and prices are accordingly low, no definite quotations being established. Offers of No. 1 Scotch Pig Iron for future delivery have been made as low as $22.75, but little has been sold at that figure. Ordinary grades of Continental Pig Iron may be had still lower. Eastern Foundry Iron is offered at $27 to $27.50, as last quoted, but little is being sold. Contracts for the turbines and pumps for the fire protection system are to be awarded this week, and if the contract goes to a local house some Pig Iron business may result. The bid of the D'Olier Engineering Company, Philadelphia, is the lowest for this work, but preference may be given to local manufacturers.

Coke.—The situation of Coke in this market is similar to that of Pig Iron, as stocks are still burdensome, both with foundries and dealers. There is little inquiry, and only a few small lots are being moved, except at liberal concessions. A lot of 2000 tons of Welsh Coke, which came in on the bark Duc D'Aumale, and was not accepted by Meyer, Wilson & Co., the consignees, on account of its damaged condition, was sold at auction for $7.86 per ton, or 1c. per ton over duty and freight.

Cast Iron Pipe.—Business in Cast Iron Pipe has been very quiet since the first of the month, no tonnage of any consequence having been moved, and few inquiries being out. Plans for a considerable number of small installations are being perfected, and some increase of business is looked for after the first of the year. Some important developments in regard to the fire protection system for this city are expected in a few days. Plans have been completed for a water system for the town of North Yakima, Wash., but it has not been decided whether Iron or Steel Pipe will be used. The town of San Bernardino, Cal., is in the market for several carloads, the contract for which will be awarded in about a week. Plans are being made for a water system for the town of Turlock, Cal. Bids have been submitted for Pipe for the Water Works system for Gridley, Cal., the contract for Cast Iron Pipe being awarded to the United States Cast Iron Pipe and Foundry Company, which bid $33.60 per ton for 6 and 8 in. Pipe, $34.50 for 4-in. Pipe, and 3.4c. per pound for special castings. The contract for fire hydrants was awarded to the Pacific Coast Supply Company. A water system is to be installed immediately in Wenatchee, Wash., at a cost of about $30,000, exclusive of machinery.

Merchant Pipe.—Transactions in Merchant Pipe this month have been a little greater in the aggregate than at the same date in November, but this is attributed to a few orders

for more than average tonnage. The movement from manufacturer to jobber is very small, few orders having been placed for stock, though a somewhat better inquiry is reported for carload lots to be shipped from mill to consumer. There is little activity in the oil fields at present, and no large orders either for Pipe or Supplies are expected from that source during the winter. Discounts on jobbers' carloads are quoted as follows:

	Steel. Black	Steel. Galv.
	%	%
⅛ to ¼ in.	56.5	40.5
⅜ in.	58.5	44.5
½-in	60.5	48.5
¾ to 6 in.	64.5	54.5
7 to 12 in.	61.5	46.5
Extra strong, plain ends:		
⅛ to ¾ in.	49.5	37.5
½ to 4 in.	56.5	44.5
4½ to 8 in.	52.5	40.5
Double extra strong, plain ends:		
½ to 8 in.	45.5	34.5

Old Material.—The local market for Old Material is still very quiet, about the only movement being from the small junk dealers, who are selling Cast Iron Scrap at low prices. Some of the sash weight foundries are melting considerable Light Cast Iron Scrap, which they have been able to secure far below usual market rates. There is no demand for Sash Weights, but the material is being made up for stock. No prices are given on Heavy Cast Iron Scrap, as the dealers are holding large quantities for a more favorable market, and none could be disposed of except at a very low figure. About 200,000 tons, in round figures, of old Structural Steel is now piled up in San Francisco yards, and it has not been decided what disposal will be made of it.

The Enterprise Foundry Company has filed articles of incorporation in San Francisco, with a capital stock of $100,000. The incorporators are H. Martens, J. W. Heaney, C. J. P. Hoehn, J. L. Moore and H. J. F. Niemann.

The Southern Pacific machine shops in Oakland, which have been running on a 9-hr. basis, started on an 8-hr. day this week.

J. W. Miller of the Star Drilling Machine Company, Akron, Ohio, has been in Portland, Ore., with a view to establishing a branch in that city.

A site of 3 acres has been secured at Boston Harbor, near Seattle, Wash., by Lapham Bros., Pittsburgh, who, it is reported, will erect a Steel plant.

The International Iron Company has been incorporated at San Diego, Cal., with a capital stock of $250,000, by L. J. Webb, C. L. Reed, L. A. Wright, H. G. Gwyn and E. V. Winnek.

The Lester Hydraulic Ram & Irrigation Company will construct a $25,000 plant at Vancouver, Wash., including a foundry equipped to produce castings up to 5 tons.

H. H. Whittle and J. J. Evans, now conducting a foundry at Redlands, Cal., are planning a similar enterprise at Colton, Cal.

The Union Iron Works, which a few months ago was employing only 350 men, now has a payroll of 1000.

The Government will shortly erect Steel coal bunkers at California City with a capacity of 100,000 tons.

St. Louis.

ST. LOUIS, MO., December 14, 1908.

According to the report of the Missouri State Bureau of Labor and Statistics, St. Louis manufacturing establishments in 1907 turned out products valued at $314,185,326. Of eight leading industries, the Car works of the city held the second place, the product of which reached nearly $23,000,000. The output of the foundries and rolling mills figured nearly $16,500,000. Stoves and ranges exceeded in value $7,500,000. The great improvement in local financial conditions is well illustrated by the fact that in the past two months the gain in the deposits of the individual customers of the eight national banks is over $6,000,000. St. Louis banking institutions now have in the aggregate over 50 per cent. larger deposits than in December, 1907.

Coke.—The tone of the Coke market continues firm, notwithstanding a limited volume of inquiries and few transactions reported by the principal subagencies. This is the time of the year when activity is not expected, and as the leading producers are aware of this and have a fairly large number of contracts in hand for forward shipment, no pressure is being exerted to affect sales. While in some instances the price has been advanced 10c. per ton, it is thought on firm offer last week's prices would be accepted. In quoting prices, reference is had to shipment over first half of 1909, the range for 72-hr. Foundry Coke being $2.25 to $2.75, f.o.b. ovens, Connellsville, according to quality and time of shipment.

Pig Iron.—The market on Pig Iron is of a holiday character, and the usual close of the year dullness is now being experienced. The leading sellers report some business moving, but it is coming from the smaller outside consumers. No single sales above 300 tons are reported, but with some houses the aggregate of sales reaches quite satisfactory figures. These are mostly for prompt shipment. Some producers are unwilling to name a price for first half of 1909 shipment. A confident feeling prevails that with the turn of the year there will be an active demand with an upward tendency. We quote Southern No. 2 Foundry, Birmingham, as follows: Immediate shipment and first quarter of 1909, $13; for second quarter, $13.50. Ohio Iron continues strong at $15.50 to $16 for No. 2, at Ironton; Northern Silvery, 8 per cent. Silicon, $18.50 to $19, at Jackson County furnaces.

Finished Iron and Steel.—In Structural Iron there is at present very little demand, the disposition being to await the turn of the year, and as there are some important contracts to be let the inquiry will soon be improved. Standard Rails are quiet, but Light Rails are meeting with a good inquiry, and specifications on existing contracts are all that could be expected. There are some inquiries pending, involving considerable tonnage, from lumber interests. All kinds of railroad track material are in demand. The business in Bar Iron and Steel is improving, and is coming principally from manufacturers, though jobbers are in the market to complete assortments.

Old Material.—While there is some inquiry from consumers, both local and at outside points, buying has been confined to small lots. There is a disposition among dealers to close out undesirable holdings, but prices on nearly all the list are firm and unchanged. Dealers being aware of what to expect toward the close of the year, are not looking for much activity until after New Year's. The offerings by the railroads are as follows: Missouri Pacific, 900 tons; Wabash, 500 tons; Vandalia, 300 tons. We quote, as follows, f.o.b. St. Louis, per gross ton:

Old Iron Rails	$17.00 to $17.50
Old Steel Rails, rerolling	15.50 to 16.00
Old Steel Rails, less than 3 ft.	14.25 to 14.75
Relaying Rails, standard sections, subject to inspection	24.00 to 24.50
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel Scrap	14.75 to 15.25
Frogs, Switches and Guards, cut apart	14.75 to 15.25
Mixed Steel	10.25 to 10.75

The following prices are per net ton:

Iron Fish Plates	$16.00 to $16.50
Iron Car Axles	20.00 to 20.50
No. 1 Railroad Wrought	14.50 to 15.00
No. 2 Railroad Wrought	13.50 to 14.00
Railway Springs	13.00 to 13.50
Locomotive Tires, smooth	13.50 to 14.00
No. 1 Dealers' Forge	11.50 to 12.00
Mixed Borings, &c.	7.00 to 7.50
Machine Shop Turnings, &c.	9.50 to 10.00
No. 1 Boilers, cut to Sheets and Rings	10.00 to 10.50
No. 1 Cast Scrap	13.50 to 14.00
Railroad Malleable	12.00 to 12.50
Agricultural Malleable	10.50 to 11.00
Pipes and Flues	10.50 to 11.00
Railroad Sheet Scrap	10.50 to 11.00
Railroad Grate Bars	12.50 to 12.75

Lead, Spelter, &c.—Pig Lead is ruling very quiet, at 4.12½c. to 4.15c. Some of the trade attribute the lack of demand to the fear of leading interests making a further reduction rather than to consumers having ample supplies. Lead Ore is held at $26 per 1000 lb., Joplin basis. Spelter continues strong, at 5.05c. to 5.10c. for prompt shipment, and higher figures are asked for deferred shipment. Brass stock is ruling at 5.35c. for prompt and 5.50c. for deferred shipment. Zinc Ore is firm, at $44 to $45 per ton, Joplin basis. Surplus stocks of metal carried at smelters have been materially reduced, and this, it is believed, will cause prices to strengthen after the first of the year.

The Ewald Iron Company reports that the inquiry from railroads during the past six weeks has been the best of the year, and the sale of Stay Bolts and other high grade stock has been good.

The American Car & Foundry Company reports closing the contract to build for the Harriman interests 1870 freight cars.

The John O'Brien Boiler Works Company states that since early in November inquiries for boilers have steadily increased and orders are resulting from them.

The Edison Electric Company, Los Angeles, Cal., is gathering data covering plans for the construction of a central plant for all of the beach towns from Santa Monica to Naples, taking in Ocean Park, Venice, Inglewood, Moneta, Gardena, Redondo, San Pedro, Wilmington, Long Beach and Alamitos. It is expected that in the neighborhood of $500,000 will be required for this installation.

The British naval work given out to private builders includes 14 destroyers, 5 cruisers and the engines for two battleships, to be built in the naval dock yards. The destroyers will have a speed of only 27 knots, but will possess improved sea going qualities. They will have turbines, but no provision is to be made for oil fuel.

Pittsburgh.

PARK BUILDING, December 16, 1908.—(*By Telegraph.*)

Pig Iron.—Aside from an inquiry for a good block of Basic Iron for delivery in the first quarter of the year, there is little stir in the Pig Iron market. Consumers are pretty well covered, and as this is inventory period and business for this year is being closed up, there will probably not be any buying of Pig Iron until January. Prices are reasonably firm, but small lots of Basic and Bessemer Iron can be had from dealers at slightly lower prices than are quoted by furnaces. We quote Standard Bessemer Iron at $16.50; Basic, $15.50; Malleable Bessemer, $16; No. 2 Foundry, $15.50; Forge, $14.25 to $14.35, all at Valley furnace and for first quarter delivery, the freight rate to Pittsburgh being 90c. a ton.

Steel.—Shipments of Billets, Sheet and Tin Bars and Forging Billets against contracts by the mills this month are fully as heavy as in the same period in November, and we are advised that several new orders for fair sized quantities of Billets have been placed at regular prices. We quote Bessemer and Open Hearth Billets, 3⅞ in. and larger, up to and including 0.25 carbon, $25; 0.26 to 0.60 carbon, $1 extra; over 0.60 carbon, $2 extra, all f.o.b. Pittsburgh. For Wheeling, Martin's Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are $27.50, f.o.b. Pittsburgh. Forging Billets take $2 advance over Rolling Billets.

(*By Mail.*)

This month so far has been a distinct disappointment to the Steel trade, new orders having fallen off a good deal as compared with November, while specifications against contracts are also lighter. In fact, consumers seem more concerned just now in arranging for inventories and closing up the year's business than they are in placing orders. Prices all along the line are reasonably firm, and very little is heard of cutting. Consumers of Pig Iron are pretty well covered for several months ahead, and there has been very little new buying this month. Specifications against contracts for Pig Iron have fallen off, but will no doubt be better when the new year is reached. Some contracts for Bessemer Billets, Forging Billets and Sheet and Tin Bars for first quarter and first half have been made, and while reports are current that regular prices on Billets and Bars are not always observed, these reports are strongly denied by the Steel mills, who insist that prices are being absolutely maintained.

Ferromanganese.—There is little inquiry, consumers not desiring to make new contracts until after the first of the year. We quote foreign 80 per cent. Ferro at $44, seaboard, or $45.90, Pittsburgh, but on a firm offer this would probably be shaded.

Ferrosilicon.—This material for prompt delivery is scarce, and we note a sale of about 25 tons for spot shipment at about $64.50, Pittsburgh. For delivery over first quarter 50 per cent. Ferrosilicon is held at about $63.50, Pittsburgh.

Wire Rods.—The recent inquiry for about 2500 tons of Chain Rods has not yet been closed. We also note an inquiry for 1000 tons of Wire Rods, which will likely be placed before this month is out. Specifications against contracts are not coming in as freely this month as they did in November, but this is probably due to inventory period. Prices are firm and we quote Bessemer Rods at $33; Chain Rods, $33, and Basic, $34, Pittsburgh.

Muck Bar.—No new orders are being placed, and we continue to quote best grades, made from all Pig Iron, at $28 to $28.50, Pittsburgh.

Skelp.—The demand for Iron Plates has been quite urgent for some time, and mills rolling the larger sizes are filled up for the next two or three months. One consumer recently placed a contract for 500 tons of wide sizes of Iron Plates on the basis of 1.85c., at maker's mill. Prices are firm and we quote: Grooved Steel Skelp at 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.75c., and Sheared Iron Skelp, 1.85c., f.o.b. Pittsburgh. A sale is reported of about 500 tons of Sheared Iron Skelp, at 1.85c., Pittsburgh.

Steel Rails.—In the past week the Carnegie Steel Company received new orders and specifications for nearly 2000 tons of Light Rails and some small orders from traction lines for Standard Sections. Makers of Light Rails rerolled from Old Rails continue to sell at $2 to $3 a ton under Rails rolled from Billets. Prices on new Light Rails, rolled from Billets, are as follows: $25 for 25 to 45 lb. Sections, with $1 advance for 20 lb., $2 advance for 16 lb., and $3 advance for 12 lb. Standard Sections are $28, at mill, and Angle Splice Bars, 1.65c., at mill.

Structural Material.—Trade continues quiet. Bids have gone in from some of the local Structural concerns on about 2700 tons for the new machine shop and foundry, to be erected by the Crane-Best Company, at Verona, and also on two grade crossings for the Lake Shore at Chicago, 1125 tons. The Wm. B. Scaife & Sons' Company has taken about 275 tons for some new Steel buildings for Spang, Chalfant & Co., at Etna, Pa. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c. net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Blub Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

Plates.—The demand shows a large falling off, as compared with the same period in November. The Jones & Laughlin Steel Company is now rolling, and making shipments on the order for about 5000 tons of Plates and Shapes for the new Ore boat to be built by the Great Lakes Engineering Works, for the Shenango Furnace Company. While the Plate market is firmer, there is still some cutting in prices, but this does not as a rule amount to over $1 a ton, and for the narrow sizes. We quote: Tank Plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. Plate. Steel Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40
Locomotive Firebox Steel	.50
Shell grade of Steel is abandoned.	
For widths over 100 in. up to 110 in	.05
For widths over 110 in. up to 115 in	.10
For widths over 115 in. up to 120 in	.15
For widths over 120 in. up to 125 in	.25
For widths over 125 in. up to 130 in	.50
For widths over 130 in	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.

Sheets.—A fair number of new orders for Black, Galvanized and Corrugated Roofing Sheets is being placed this month, but this being the closing month of the year, when inventory is being taken, jobbers and large consumers are naturally doing as little buying as possible until after the first of the year. However, the general Sheet trade is showing betterment over the conditions of several months ago, and the percentage of capacity in operation has largely increased. This week the American Sheet & Tin Plate Company is operating 108 hot mills, or 61 per cent. of its capacity, several of its largest Sheet plants being operated in full, among these being the Vandergrift Works, 37 hot mills; Canal Dover Works, 11 hot mills, and the Leechburg Works, which has eight hot mills, is running seven this week. It is believed the demand for Sheets will be quite active after the first of the year. Prices are being well maintained, only very slight concessions being occasionally made, and not more than $1 to $2 a ton on desirable orders. For shipment from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—The demand is fairly active, but it is known that some large orders are being held up until after the first of the year. Leading mills are now working largely on contracts for Bright Plate placed some time ago by the leading salmon packers and canning interests, most of this tonnage to be shipped out prior to April 1. A larger percentage of Tin Plate capacity is operating now than for some time.

Several of the leading independent mills, including the Pope Tin Plate Company at Steubenville, Ohio, 12 hot mills, and McKeesport Tin Plate Company, 10 hot mills, are operating full, while the American Sheet & Tin Plate Company is operating this week 136 hot mills, or 56 per cent. of its Tin Plate capacity. The South Sharon Works at South Sharon, Pa., containing 20 hot Tin mills, is now in full operation. We are advised that prices are firm, and that practically all of the orders placed for some time were at full regular prices. We quote: $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Iron and Steel Bars.—Few new orders for Iron or Steel Bars are being placed, consumers being covered by contracts given to the mills some time ago, on which specifications are coming in quite freely. The Cambria Steel Company, one of the largest Steel Bar makers, is running to nearly 90 per cent. of capacity, while Republic, Carnegie and Jones & Laughlin are running about the same. The Youngstown mills of Republic are on this week practically full with good prospects ahead. The higher prices ruling on Iron and Steel Scrap are having the effect of making prices on Bars very firm, and we are advised that regular prices on both Iron and Steel Bars are being maintained. We quote Iron Bars at 1.42c., Pittsburgh, for Western shipment, or 1.60c., Chicago, while the price for delivery in the Pittsburgh District is 1.50c. Steel Bars are firm, at 1.40c., Pittsburgh, for base sizes.

Hoops and Bands.—The season is practically over, but as yet the mills have made no announcement of their prices on Hoops and Bands for next year. It is probable this will be done very early in January, when it is expected that some large contracts for all of next year delivery will be placed. Regular prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

Railroad Spikes.—A few of the large Western roads have placed some heavy contracts for Spikes for delivery over all of 1909 at present prices, but the local Spike makers are not inclined to take orders for such long delivery at present rates, believing that if general trade improves early in the year prices on Spikes may be higher. Some fair sized new orders for quick shipment are being placed with local mills by the railroads, but these are mostly for repair work. It is expected that the Pennsylvania Railroad will place its Spike order within the next week, to be followed by orders from other roads. Prices are firm, and we quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb., in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

Merchant Pipe.—The regular demand for merchant sizes is keeping up remarkably well, but new orders entered this month will not be as large as in November, which was an exceptionally good month in the Pipe trade. Jobbers are not specifying as freely at present against contracts, but this is due to inventory period, and the desire to close up the year's business with as light stocks on hand as possible. We note an inquiry in the market for 30 miles of 6 and 8 in. Line Pipe for a gas line in Louisiana, and also 20 miles of 6 in. for the Western Pacific Railroad in Utah. This latter order has been hanging fire for some time. We also note an inquiry for 10 miles of Iron Pipe for delivery in the gas fields of Pennsylvania. The Standard Oil Company is buying heavily of Pipe right along, its total business this year being reported as fully as large as last year. Prices on both Iron and Steel Pipe are being absolutely maintained. Discounts on Steel Pipe, ¾ to 6 in., to the large trade, are 76 and 5 per cent. off list. Regular discounts are as follows:

Merchant Pipe.

	Jobbers, carloads, Steel.	
	Black.	Galv.
	%	%
⅛ to ¼ in.	67	51
⅜ in.	69	55
½ in.	71	59
¾ to 6 in.	75	65
7 to 12 in.	72	57
Extra strong, plain ends:		
⅛ to ⅜ in.	60	48
½ to 4 in.	67	55
4½ to 8 in.	63	51
Double extra strong, plain ends:		
½ to 8 in.	56	45

Discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
	%	%
⅛ to ¼ in.	65	..
⅜ in.	67	53
½ in.	69	57
¾ to 6 in.	73	63
7 to 12 in.	70	55
Extra strong, plain ends:		
⅛ to ⅜ in.	58	46
½ to 4 in.	65	53
4½ to 8 in.	61	49
Double extra strong, plain ends:		
½ to 8 in.	54	43

Merchant Steel.—We are advised that the demand for Shafting continues fairly active, and prices are being better maintained than for some time. New orders for Merchant Steel are light, and specifications against contracts are only fair. We quote Cold Rolled Shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Regular prices on Merchant Steel, which are being shaded to some extent, are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1½ x ½ in. and heavier, 1.40c.; under 1½ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

Spelter.—Prices are not quite as firm as last week, and prime grades of Western are now held at about 4.90c. to 4.95c., East St. Louis, equal to 5.02½c. and 5.07½c., Pittsburgh.

Boiler Tubes.—Some small orders for Locomotive Tubes are being placed by the railroads for repair work, but the large orders are being held back. There is some large inquiry for Locomotive Tubes for next year's delivery. The demand for Merchant Tubes is light, and while prices are firmer, some concessions are still being made. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in.	42	47
1¾ to 2¼ in.	42	59
2½ in.	47	61
2¾ to 5 in.	52	65
6 to 13 in.	42	59

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Iron and Steel Scrap.—Some unusual conditions exist in the local Scrap trade. The Eastern market is so strong that some local dealers who are buying Scrap at points north and west of Pittsburgh instead of bringing it to this city are routing it through to Philadelphia and other points, the freight rate being only $1 higher than to Pittsburgh. It is said that Heavy Steel Scrap from as far west as Indianapolis has recently been sold for delivery in Philadelphia and other Eastern consuming points. Local consumers of Scrap are pretty well covered, including the Pittsburgh Steel Company, which is the largest individual consumer, and are not inclined to take in any more Scrap this month than they can avoid. However, the market is firm, and this month the Pennsylvania and the Baltimore & Ohio railroads sold very little Scrap, turning down offers made by dealers, believing they will get higher prices very early in the year. We quote per gross ton as follows: Heavy Steel Scrap for Pittsburgh, Steubenville, Sharon, Leechburg or Monessen delivery, $16.50 to $16.75; Cast Iron Borings, $11.50 to $11.75; Bundled Sheet Scrap, $13.50 to $13.75; No. 1 Busheling Scrap, $14.75 to $15; No. 2, $10.75 to $11; No. 1 Cast Scrap, $15 to $15.25; Iron Axles, $24.50 to $25; Sheet Bar Crop Ends, $18.50 to $19. Rerolling Rails, 18, delivered, Cambridge, Ohio, or $18.50, delivered, Cumberland, Md.; Low Phosphorus Melting Stock 0.04 and under, $18.50 to $19; Steel Axles, $19.50 to $20; Grate Bars, $13 to $13.25; Machine Shop Turnings, $12.50 to $13; Railroad Wrought Scrap, $17 to $17.25; Railroad Malleable Scrap, $15.50 to $15.75; Iron Rails, $18.75 to $19, and Locomotive Tires, $17.50 to $17.75. We note sales of about 400 tons of Cast Iron Borings at $11.50; 1000 tons of Heavy Steel Scrap at $16.75, Sharon, and about 600 tons at about $16.75, Monessen, Pa.

Coke.—The Coke trade has been somewhat quiet, but we note that a Shenango Valley furnace is in the market for its entire requirements of Furnace Coke, about 200 tons a day, for first half of the year, while a local furnace is in the market for about 7500 tons of Coke a month for first half of the year. None of this business has yet been closed. Coke makers are quoting $1.90 to $2 a net ton for strictly Connellsville Furnace Coke for first half of the year, while for Klondike Furnace Coke $1.85 to $1.90 is quoted. Connellsville Furnace Coke for spot shipment is a little weaker, and we note a sale of about 2500 tons for December shipment at $1.80, at oven. Connellsville 72-hr. Foundry Coke for first half of the year is held at $2.25 to $2.40, while outside makes are offered at about $2.15, at oven. The output of Coke last week in the two Connellsville regions was 235,211 tons, an increase over the previous week of 6000 tons.

The Follansbee Brothers Company, Pittsburgh, works at Follansbee, W. Va., manufacturer of high grade Tin Plate and Steel Sheets, has opened an office at 11 East Town street, Columbus, Ohio, with Herbert B. Jones, district sales agent in charge. Drummond, McCall & Co., Montreal and Toronto, have been appointed agents for the sale of Follansbee Polished Steel Sheets in the Dominion of Canada.

The Mechanics' Supply Company, Pittsburgh, will on or about December 21 move its offices and stock from 209 Water street to 324 Third avenue.

Thos. R. Heyward, Jr., of the firm of Thos. R. Heyward

& Co., formerly Daft, Heyward & Co., Inc., Pittsburgh, exclusive agents in the Pittsburgh District for Frank Samuel, Philadelphia, for the sale of Dinsdale Standard English 80 per cent. Ferromanganese. Spiegeleisen and other alloys, has accepted a position with Walter-Wallingford & Co. of Pittsburgh and Cincinnati, and will assist Mr. Wallingford and Mr. Price in the management of the Pittsburgh office of that firm in the handling of its various agencies for Pig Iron and Coke. Mr. Heyward still retains the agencies for alloys, &c., above mentioned, and these will be handled jointly through the firm of Walter-Wallingford & Co. Andrew J. MacEwan of Thos. R. Heyward & Co. has also accepted a position with Walter-Wallingford & Co., and will act in the same capacity as heretofore with the first mentioned company.

Philadelphia.

PHILADELPHIA, PA., December 15, 1908.

Repeated rumors and denials regarding the placing of Rail orders for next year by the Pennsylvania Railroad Company have kept the trade guessing during the past week. While official confirmation is still lacking, we are in a position to state that a decision as to the tonnage, allotment and specifications, regarding which there has been so much controversy between the officials of the company and the Rail makers, was reached several days ago, and the formal orders, if they have not already gone forward, will do so in the next day or so. While details have in a measure become public, they are not yet confirmed, although we are pretty safe in saying that the total order will be for 135,000 tons, with the privilege of increasing it to 160,000 tons, the allotment being as follows: Illinois Steel Company and Carnegie Steel Company, 62,000 tons; Cambria Steel Company, 25,000 tons; Pennsylvania Steel Company, 25,000 tons; Lackawanna Steel Company, 13,000 tons; Bethlehem Steel Company, 10,000 tons. It is expected that about one-half of the order will be for Open Hearth and the other half Bessemer Steel. Official information regarding the details of specifications is not yet available. With the placing of this order heavy buying is expected to come from some of the other roads, which have been awaiting the action of the Pennsylvania Railroad. The Pig Iron market in this territory has been rather dull, as is customarily the case at this season of the year, and business, outside of a few scattered lots of fair size, has been confined to small spot lots. Prices are very firm and the market on the whole shows increasing strength. In finished and semifinished lines the demand has been rather light. Refined Iron Bars are stronger and prices show an advancing tendency. Old Materials are decidedly stronger, particularly Heavy Melting Steel, which has advanced sharply owing to a recent heavy sale.

Pig Iron.—Characteristic end of the year dullness is to be noted in the local Iron market. With few exceptions transactions have been on a small scale, the business coming from buyers who usually purchase for their prompt and near future requirements only. The situation is decidedly strong, sellers in a number of instances being out of the market as far as Iron for the next month or two is concerned, and are not anxious to take tonnage for forward deliveries, at the ruling market prices. Melters are reported to be taking deliveries freely, and in some cases are urging shipment on Iron purchased for January and February delivery. It is said that stocks on furnace banks are still slowly decreasing, and some further capacity will be put in blast to take care of the increased general orders taken by some producers. The No. 3 Brooke Furnace at Birdsboro will be blown in next week, and be run largely on Basic Iron; while the No. 3 Warwick, at Pottstown, will go in as soon as rebuilding is completed, which is now expected to be about February 1. During the week the large majority of sales have been in the Foundry grades, the individual tonnages, outside of some fair lots of Pipe Iron, being small, usually for pretty prompt delivery. Pipe makers have taken small tonnages of high grade Foundry Iron, while at least one block of several thousand tons of high silicon Forge, for foundry purposes, delivery over the first quarter of the year, was sold at $16, delivered. Prices for standard eastern Pennsylvania No. 2X Foundry are very firm, and while $17.25, delivered, can still be done, sellers in a number of cases find no difficulty in obtaining $17.50 for that grade, while a few instances are to be noted where the top price has been bettered. Virginia Foundry Irons have been sold in small lots for shipment into this territory, at $17.50, delivered, for prompt No. 2X, and in one instance, where delivery ran through the first quarter, 25 cents advance was obtained. One Virginia seller reports the sale of several thousand tons of Pipe Iron, to a nearby consumer, at $13.75, furnace. Southern Iron has not been active, some small lots have been sold, but with prices ranging from $13 to $13.50, Birmingham, for No. 2 Foundry, little tonnage can be sold to the general foundry trade in this territory. The demand for Forge Iron, at least on the part of the rolling mills, has been comparatively light, although some tonnage of this grade has been taken by Cast Iron Pipe foundries. Sales for mill purposes have been confined to small lots for early delivery, at ruling quotations, although some producers have advanced their asking prices 50 cents a ton. While no new business has been done in Basic Iron, a belated report of one lot of about 6000 tons, sold last week at a price under $17, delivered, came out. Steel makers in this territory are in the market for some 20,000 to 30,000 tons of Iron of this grade, for delivery during the second half of the year, for which sellers ask flat $17, delivered, and while there is no apparent disposition to shade the price, a reduction of 25 cents would, it is believed, result in the placing of considerable business. Low Phosphorus Iron has not been in active demand, although one seller reports a sale of 5000 tons of 0.035 Iron, for Western shipment, at a price equivalent to $21.50, delivered in this territory. The market on the whole is very firm throughout. The melt must be increasing, judging from the way buyers take deliveries, and a decided improvement is looked for early next year. For delivery in buyers' yards, eastern Pennsylvania and nearby territory, quotations for delivery during the first quarter of next year range as follows:

Eastern Pennsylvania, No. 2 X Foundry	$17.25 to $17.50
Eastern Pennsylvania, No. 2 Plain	16.75 to 17.00
Virginia, No. 2 X Foundry	17.25 to 17.75
Virginia, No. 2 Plain	17.00 to 17.25
Gray Forge	15.75 to 16.00
Basic	16.75 to 17.00
Low Phosphorus	21.50 to 21.75

Ferromanganese.—Inquiries have been light, and no sales of importance have been reported. In the absence of business quotations show less variation, the majority of sellers naming $46 to $46.50, Baltimore, for delivery over the first half of the year.

Steel Billets.—Business continues along narrow lines. Inquiries for any tonnage of size are scarce, the current demand being largely for small, prompt lots. Prices are unchanged, ordinary Rolling Steel for delivery in this territory being quoted at $26.20, with Forging Steel $28.20, subject to the usual extras for high carbons and special sizes.

Plates.—A fair volume of business continues to come out, mostly of a miscellaneous character, although several large lots are pending. An increase in the demand for Boiler Plates is to be noted, while Plates for structural and ship work continue in fair demand. No change is to be noted in prices, which, for delivery in this territory, range as follows:

	Carloads. Cents.	Parts carload. Cents.
Tank, Bridge and Boat Steel	1.75	1.80
Flange or Boiler Steel	1.85	1.95
Commercial Firebox	1.95	2.00
Marine	2.15	2.20
Locomotive Firebox Steel	2.25	2.30

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Structural Material.—Several large propositions which have claimed the attention of the trade for some little time still remain unclosed. Current business has been small and of a miscellaneous character, and little of importance is expected to develop until after the turn of the year. Prices are being firmly held, and for delivery in this territory range from 1.75c. to 1.90c., according to specifications.

Sheets.—A material improvement in the demand is to be noted, due to a considerable extent to the fact that buyers are covering their requirements during the usual year end suspension of mills for the holidays, stock taking and repairs. The business is fairly close to the average, although mills have but little booked ahead. Quotations for mill shipments range as follows, a tenth of a cent extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—Little business of importance has come out, transactions being for the most part in small lots, for which there is quite a fair inquiry. Prices of Refined Iron Bars are stiffer owing to advancing prices of raw materials, and some mills announcing further advances, as high as 1.60c., mill, being quoted in one instance, but this is the extreme, 1.45c. to 1.50c., mill, representing the general average, equal to 1.52c. to 1.60c., delivered, in this territory. Steel Bars are unchanged at 1.55c., with Rerolled Bars at 1.50c., delivered, in this district.

Coke.—No particular change is to be noted in the demand for Coke. Prices for the better brands are firm, and some of the low price sellers have withdrawn quotations. Sales, however, have not been extensive and prices show no change. Foundry Coke is quoted at $2.30 to $2.60, at oven, and Furnace Coke, $1.90 to $2.10, at oven. For delivery in this territory prices range about as follows:

Connellsville Furnace Coke	$3.90 to $4.10
Foundry Coke	4.20 to 4.50
Mountain Furnace Coke	3.50 to 3.70
Foundry Coke	3.80 to 4.10

Old Material.—The market, particularly for Heavy Melting Steel, is decidedly stronger. The heavy transactions of last week, by which one melter in this territory took 25,000 tons of that grade, for delivery over three months, at a reported average price of $17.75, delivered, has forced price up. While quotations are being made on a higher basis, no sales are reported, as Steel makers as a rule refuse to pay over $17, although $17.35 is understood to have been paid by a mill for a small tonnage. Moderate sales of rolling mill Scrap at full prices have been made, and small tonnages have also been sold in some of the specialties. While buying has not been active the market is firm, and quotations while to some extent nominal range about as follows, for deliveries in buyers' yards, eastern Pennsylvania and nearby points:

No. 1 Steel Scrap and Crops	$17.50 to $18.00
Low Phosphorus	18.50 to 19.50
Old Steel Axles	22.50 to 23.00
Old Iron Axles	24.25 to 24.75
Old Iron Rails	21.25 to 21.75
Old Car Wheels	16.00 to 17.00
Choice No. 1 R. R. Wrought	20.00 to 20.50
Machinery Cast	16.00 to 16.50
Railroad Malleable	15.75 to 16.25
Wrought Iron Pipe	15.25 to 15.75
No. 1 Forge Fire Scrap	13.75 to 14.25
No. 2 Light Iron	10.00 to 10.50
Wrought Turnings	14.00 to 14.50
Stove Plate	13.75 to 14.25
Cast Borings	13.00 to 13.50
Grate Bars	14.50 to 15.00

Cleveland.

CLEVELAND, OHIO, December 15, 1908.

Iron Ore.—The lake shipping season, which has just closed, has been most unsatisfactory to the vessel owners. The start was late and at no time was the volume of business large enough to take care of over about 60 per cent. of the vessel capacity. Many freighters, including some owned by leading Ore firms, were idle all the season. The bulk of the Ore was moved in boats owned by the shippers. While operating expenses were not reduced, Ore carrying charges were reduced 10 cents a ton at the beginning of the season, and the lower rate remained in effect till the close of navigation. Half of the boats of some of the independent vessel interests did not go into commission during the season. Owing to the light movement of Ore many of the big freighters that took cargoes of coal up the lakes were forced to come down light. As a result of the poor season little money was made for the stockholders of the vessel property. Dividends will be paid by some of the lines, but they will be small as compared with the few previous years. Shipping orders for Ore have dropped off and little is moving from the docks. Furnace yards are well filled, and it is expected that dock shipments will be light for the greater part of the winter. Ore prices at Lake Erie ports are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range Non-Bessemer, $3.70; Mesaba Non-Bessemer, $3.50.

Pig Iron.—The local market is almost lifeless. There are practically no inquiries. The only activity noted is a slight spurt in Toledo. A local interest made six sales from its Toledo furnaces during the week, aggregating 8000 tons. More than half of this was Foundry Iron, the remainder being Malleable. The Iron was mostly for delivery during the first quarter, some being for the entire first half. The largest lot was 3000 tons. Most of this tonnage was sold at $16, at furnace, for No. 2 Foundry and Malleable. A local foundry has made inquiry for 2000 tons of Foundry Iron for last half, on which a price of $17, at furnace, for No. 2, was quoted. Some consumers would doubtless cover for a portion of their last half requirements if they could do so at the present prices. The market is firm and prices are stationary, furnaces not shading quotations to get business. No. 2 Foundry is quoted at $15.50 to $16, Valley furnace, for the first half, furnace interests that are well sold up holding to the higher figure. Shipping orders on contracts are reported satisfactory by all furnace interests, showing considerable improvement as compared with two or three months ago. Stock piles have been reduced considerably, some of the furnaces now shipping out Iron faster than they are making it. Instead of buying spot Iron for immediate requirements, many consumers are asking that January shipments be anticipated. A local interest received five requests of that kind in one day last week. The River Furnace of the Upson Nut Company, which has been out of blast for relining, will be blown in December 16. Emma Furnace of the American Steel & Wire Company was blown in last week after being idle for over a year. There is some inquiry for Bessemer Iron, but only in lots of 500 tons or less. We note the sale of 300 tons of No. 1 Southern Iron for export to Canada. For spot shipment we quote No. 2 Northern Foundry Iron at $16.75 to $17, delivered, Cleveland. For the first quarter and first half we quote, delivered, Cleveland, as follows:

Bessemer	$17.40 to $17.90
Northern Foundry, No. 1	17.25 to 17.75
Northern Foundry, No. 2	16.25 to 16.75
Northern Foundry, No. 3	16.25 to 16.75
Gray Forge	15.25 to 15.75
Southern Foundry, No. 2	17.35
Jackson County Silvery, 8 per cent. Silicon	20.05

Coke.—There is some inquiry for Furnace Coke, but no activity in the Foundry Coke market. Considerable Furnace Coke for spot shipment s being offered at $1.75 to $1.80, at oven. A local interest has received inquiries for Furnace Coke for last half delivery, but is not inclined to quote prices so far ahead. For first half delivery we quote Standard Connellsville Furnace Coke at $2 to $2.10, at oven. Connellsville 72-hr. Foundry Coke is firm at $2.25 to $2.50, at oven, for the first half.

Finished Iron and Steel.—The market shows little activity. Specifications have fallen off somewhat, and practically no new business is being placed. While no change in conditions is expected until after the turn in the year, sales agents are quite hopeful of a decided improvement in the volume of business about the middle of January. Specifications are mostly for Steel Bars in small lots from manufacturers. The demand for Steel Bars is holding up well. Some good stock orders have come from the jobbers, but from now until inventories are completed jobbers will withhold their orders as much as possible. Good specifications for Shapes and Plates continue to come from the shipbuilding companies. New business in Iron Bars is exceedingly light, but prices are being firmly maintained. The two local Bar mills are running full this week, specifications having improved somewhat on low priced contracts that expire January 1. In spite of the talk of firmer prices on Plates, some of the mills that make the narrow sizes are still shading prices $2 a ton. The demand continues light. In some cases not a specification has been received from consumers with whom contracts were made early in the fall. While Sheets are firmer, some of the independent mills are still shading prices. Specifications on Structural contracts are light, but an improvement is looked for early in the year. Bridge builders have little work on hand, and few orders are coming from that source. The Lake Shore Railroad has an inquiry out for 1000 tons of Structural Material for grade crossing elimination work in Chicago. Business with jobbers so far this month has been slightly better than in November, but orders are expected to be light for the balance of the month. The new Cuyahoga plant of the American Steel & Wire Company has started in operation in a small way, but the equipment has not yet all been installed, and it will be some time before the plant will be in full operation. We quote: Iron Bars, 1.50c., Cleveland, for car lots; Steel Bars, 1.60c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, ¼-in. and heavier, 1.70c., Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron Bars out of stock at 1.55c. to 1.60c., and Steel Bars at 1.60c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, ¼-in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

Old Material.—The market is quiet and dealers do not look for an improvement until after the holidays. Consumers are taking only a limited amount of Scrap on contract, and as they are well covered for the balance of the year, no new orders are being placed. One local mill has partially held up shipments during the past week, and this has resulted in a slight softening of the market on some grades of Scrap. While dealers are holding pretty firmly to prices, Scrap on the cars would not bring at forced sale a price higher than about 50 cents a ton under the regular market quotations. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	$16.50 to $17.00
Old Iron Rails	19.50 to 20.00
Steel Car Axles	20.50 to 21.00
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel	15.50 to 15.75
Relaying Rails, 50 lb. and over	22.00 to 23.00
Railroad Malleable	14.50 to 15.00
Agricultural Malleable	13.50 to 14.00
Light Bundled Sheet Scrap	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron Car Axles	$20.00 to $20.50
Cast Borings	8.50 to 9.00
Iron and Steel Turnings and Drillings	9.50 to 10.00
Steel Axle Turnings	11.00 to 11.50
No. 1 Busheling	13.50 to 14.00
No. 1 Railroad Wrought	15.50 to 16.00
No. 1 Cast	14.00 to 14.50
Stove Plate	12.00 to 12.50
Bundled Tin Scrap	9.00

Buffalo.

BUFFALO, N. Y., December 15, 1908.

Pig Iron.—Notwithstanding the fact that the market has entered upon the usual period of quietness attending the year end holiday season, the volume of inquiries and orders is surprisingly well maintained, for Foundry grades and Basic, with satisfactory conditions in all lines. An encouraging feature from the furnacemen's viewpoint is that buy-

ers concede prices asked with less contention than heretofore. Local furnaces are practically out of the market on all low grades, heavy bookings indicating they will be in this position for several months to come. Another of the Lebanon furnaces of the Lackawanna Steel Company will be blown in the first of the year, probably on Foundry grades. Prices are firm, inclining to the maximum side of the schedule. We quote as follows, f.o.b. Buffalo:

No. 1 X Foundry	$16.25 to $16.75
No. 2 X Foundry	15.75 to 16.25
No. 2 Plain	15.50 to 15.75
No. 3 Foundry	15.50 to 15.75
Gray Forge	15.25 to 15.75
Basic	16.00 to 16.50
Malleable Bessemer	17.00 to 17.50
Charcoal	20.75 to 21.25

Old Material.—The market is quiet and somewhat lower in trend. Most consumers have supplied their needs until after the first of the year. Prices are not quite as firm as for the past two or three weeks, but are not quotably lower. The following schedule fairly represents the market:

Heavy Melting Steel Scrap	$15.50 to $16.00
No. 1 Railroad Wrought	17.00 to 17.75
No. 1 Railroad and Machinery Cast Scrap	14.75 to 15.50
Old Steel Axles	19.00 to 20.00
Old Iron Axles	22.50 to 23.50
Old Car Wheels	16.75 to 17.75
Railroad Malleable	14.50 to 15.00
Boiler Plate	13.00 to 13.50
Locomotive Grate Bars	12.50 to 13.00
Pipe	12.50 to 13.00
Wrought Iron and Soft Steel Turnings	9.00 to 9.50
Clean Cast Iron Borings	8.50 to 9.00
No. 1 Busheling Scrap	14.25 to 14.75

Finished Iron and Steel.—Specifications on contracts for Bars, Plates and Structural Shapes are coming along in satisfactory volume, although there has been a slight falling off in new orders owing to the near approach of the holiday season and annual inventory time. In Structural Material considerable new business is developing for the fore part of the new year. The Adler Bros. Company's clothing manufacturing building, Rochester, will require about 400 tons of reinforced concrete Bars, and specifications for this work will soon be ready for figuring. Specifications for Structural Material required for the group of four Steel frame buildings to be erected by the Buffalo Orphan Asylum will be ready for bids about January 1. The contract for Structural Steel for the engineering building of the Union College at Schenectady will not be let until early in the spring.

Cincinnati.

CINCINNATI, OHIO, December 16, 1908.—(*By Telegraph.*)

Sentimentally, the Iron and Steel markets show more strength than for several months. Jobbers of Tool Steel, high grade Shafting and material entering into machine tools report an encouraging increase in orders. Machine tool manufacturers themselves are experiencing the first attention from the railroads for many months, and some very good lists were received this week. The nearness of the holiday season has affected correspondence somewhat, particularly in a machinery way, and the large manufacturers are not expecting much now until after the first of the year. Selling agents report that consumers are taking both Iron and Coke well on contract, and furnace companies seem to be growing more and more conservative daily in the matter of prices for late in second quarter and the last half. A number of reorganization and absorption plans are maturing to date from the first of the year, and it is expected that several important agency changes will shortly be announced. Scrap dealers are maintaining their independent attitude, and consumers as a rule are staying out of the market.

Pig Iron.—No change is to be noted in prices of either Northern or Southern Iron for the first half, but there is a more confirmed feeling that the Southern product will settle at about 50c. advance over first half prices to consumers who specify shipment over a part of the last half. A sale in this market to an Illinois concern of 500 tons of No. 1 Soft, Southern, on this basis brings the delivered price at $17.85 for the first and $18.35 for the last half, based on $13.50 and $14, Birmingham, respectively. The local market is quiet, with few inquiries out, requirements for the first half being pretty well satisfied apparently. What little Iron is in demand just now locally develops strong competition. Some recent sales are reported to have been shaded somewhat to take the business. The inquiry of a central Ohio car manufacturing concern for 1000 tons of analysis Iron, graded about No. 4 Foundry, has been satisfied in part, the concern taking last week 400 tons and 200 on Monday, but from different furnaces. The first lot was secured at about $15.35, delivered, the second lot reported as bringing a little better price, the freight rate being on a basis of $1.10, Ironton. A sewing machine concern in Illinois purchased 500 tons of No. 1 Soft, deliveries to extend through the year, on a basis of $13.50 and $14, Birmingham, respectively. High silicon Ohio Silveries are still quotable at $18.50 for 8 per cent. at furnace. Little is heard of Basic or Malleable, but jobbing foundries are beginning to buy Foundry Iron in quantities necessary to tide them through the first half, although the greater number in this territory have Iron coming in for several months in the new year, bought at the $11.50 and $12 prices of early fall. A local foundry is buying to-day 600 tons of No. 3 Foundry, deliveries March to June, or earlier, if of any advantage to the seller. A large car manufacturing interest is asking for bids on 6000 to 8000 tons of Nos. 1 and 2 Foundry and Forge for delivery to its Detroit plant during the second quarter. The No. 1 furnace of the Wellston Iron & Steel Company, recently rebuilt, is due to blow in a few days. For delivery the balance of the year and for first half we quote, f.o.b. Cincinnati, based on freight rates of $3.25 from Birmingham, and $1.10 from the Hanging Rock District, as follows:

Southern Coke, No 1	$16.75 to $17.25
Southern Coke, No. 2	16.25 to 16.75
Southern Coke, No. 3	15.75 to 16.25
Southern Coke, No. 4	15.25 to 15.75
Southern Coke, No. 1 Soft	16.75 to 17.25
Southern Coke, No. 2 Soft	16.25 to 16.75
Southern Coke, Gray Forge	14.75 to 15.25
Southern Mottled	14.50 to 15.00
Ohio Silvery, 8 per cent. Silicon	19.60
Lake Superior Coke, No. 1	17.10 to 17.60
Lake Superior Coke, No. 2	16.60 to 17.10
Lake Superior Coke, No. 3	16.10 to 16.60
Standard Southern Car Wheel	22.25 to 23.25
Lake Superior Car Wheel	21.75 to 22.75

(*By Mail.*)

Coke.—Foundry Coke, which has been almost a drug on the market for several months, is beginning to receive some attention. One of the largest local agencies on Monday booked an order for 10 cars, and notes several smaller sales in nearby territory. The price on favorite grades ranges from $2.10 to $2.50, at oven, according to brands and deliveries. There is comparatively little spot business at around $2.15, Connellsville ovens, and $2.10 in some other fields. Consumers are taking shipments promptly on Furnace Coke contracts. Pocahontas Foundry ranges from $2.10 to $2.25, at oven; Furnace grades, $1.85 to $2; Wise County grades about the same. Some Virginia makers are sold up for a considerable period.

Old Material.—The local market shows general weakness, with Melting Steel the firmest item of the list at $15.50 per gross ton. Car Wheels are in somewhat better demand, a local concern having sold 3000 tons within the past week and figuring on several other inquiries. The minimum quotation on Old Car Wheels in this market is $15.50 this week, with $17. gross ton, the outside price. Dealers do not look for much improvement in the Scrap markets until some time after the holidays. No. 1 Railroad Wrought shows some strength since last week, and consumers are paying $15.50 for select this week. Borings are a little stronger. Quotations on the list of Old Material most in use in this market as nearly as they can be gauged are about as follows, f.o.b. Cincinnati:

No. 1 R. R. Wrought, net ton	$14.50 to $15.50
Cast Borings, net ton	5.50 to 6.50
Heavy Melting Steel Scrap, gross ton	15.50 to 16.00
Steel Turnings, net ton	6.00 to 7.00
No. 1 Cast Scrap, net ton	13.00 to 14.00
Burnt Cast, net ton	9.00 to 10.00
Old Iron Axles, net ton	16.75 to 17.75
Old Iron Rails, gross ton	15.00 to 16.00
Old Steel Rails, short, gross ton	13.00 to 14.00
Old Steel Rails, long, gross ton	13.00 to 14.00
Relaying Rails, 56 lb. and up, gross ton	21.50 to 22.50
Old Car Wheels, gross ton	15.50 to 16.50
Low Phosphorus Scrap, gross ton	14.00 to 15.00

Finished Iron and Steel.—Tool Steel and Shafting specialties, which have been exceedingly dull for several months, are beginning to show signs of life. One of the largest dealers in this section reports a very fair demand since election, and has covered a half dozen or more good contracts in the past few days for Tool Steel, with large machine tool builders. The heavier shapes have sold especially well, which argues increased business in sight for manufacturers of the heavier and more expensive tools. The business with die makers has kept up surprisingly well during the months of trade depression. Bar Iron remains unchanged in dealers' markets and the current demand is light in all Structural lines. There will be some business in the way of engines, boilers, pumps, &c., in the specifications for renovation and repairs in the Newport water works plant, Newport, Ky., for which a bond issue of $85,000 is in preparation. Bids will not be asked until the conclusion of a friendly test suit, and it is expected that it will be three months ere plans are ready for inspection. About $35,000 will be expended for pumps and engines, the latter of the triple expansion, self-contained type. The building is a new one, so that the entire appropriation will be available for machinery and equipment. Prices to the trade, f.o.b. Cincinnati, are as follows: Iron Bars, carload lots, 1.55c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed

Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

Hickman, Williams & Co., with offices in Cincinnati, Pittsburgh, Chicago, St. Louis and Louisville, have absorbed and taken over the business of N. S. Bartlett & Co., Boston, New York and Philadelphia. Both are leading Pig Iron and Coke sales concerns, and the new firm will in no way change its identity or name, the only difference being the taking of the Eastern business of the Bartlett concern, with J. O. Henshaw of that firm, the active representative in the new combination, and who doubtless will be in charge of the Eastern headquarters, which are to be moved to New York. It is understood that Mr. Bartlett is to retire early in the new year from active office duties. The Bartlett agency, originally a Boston concern, has prospered wonderfully in its quarter of a century existence, and its New York and Philadelphia offices have been established about six or seven years. The Eastern firm will liquidate its own business affairs and accounts.

New York.

NEW YORK, December 15, 1908.

Pig Iron.—Some fair new orders are being placed for Foundry Iron, but on the whole the market is rather quiet, as is usual at this period of the year. One large sale is under negotiation, which is to cover deliveries during the whole of 1909. We quote $17.50 to $17.75 for No. 1 Foundry, $17 to $17.50 for No. 2 Foundry and $16.25 to $16.50 for No. 2 Plain, tidewater. Alabama Irons are quoted $17.50 to $17.75 for No. 1 Foundry, and $17.25 to $17.50 for No. 2 Foundry.

Steel Rails.—The Pennsylvania Railroad orders for 1909 have been placed. They amount to 135,000 tons, with the privilege of increasing to 160,000 tons, and early deliveries are called for, it being reported that most of the 135,000 tons is desired by March 15. The Steel Corporation is given 62,000 tons; Pennsylvania Steel Company, 25,000 tons; Cambria Steel Company, 25,000 tons; Lackawanna Steel Company, 13,000 tons, and Bethlehem Steel Company, 10,000 tons. All the Bethlehem Steel Company quota will naturally be Open Hearth Rails, and the other companies are asked to furnish Open Hearth Rails in part, in some cases to the extent of 50 per cent. The Chicago, Burlington & Quincy has bought 40,000 tons, of which 30,000 tons is Open Hearth Rails. For the St. Louis Terminal Railway Association an order for 2800 tons has been placed at Pittsburgh.

Structural Material.—Some of the business that has been overhanging the market for some weeks is being placed, but the new inquiry does not represent a tonnage equivalent to that thus disposed of. In the case of the City Hall project at Chicago, the general contract has been awarded, but the destination of the Steel, about 11,000 tons, is not yet decided. In New York City, the foundations for the proposed Municipal Building are about to be awarded, and in due time action will be had on the Steel, which may run between 20,000 and 25,000 tons. At San Francisco, Pier 38 was let to a local firm, Dyer Brothers, and the 1200 tons of Steel represented was taken at about $60,000. Other bids ran considerably higher. At Carlyle, Kan., an inquiry has come up for a new building, 640 tons, for the Lumberman's Portland Cement Company. Other inquiries, on some of which bids have gone in, are the following: Chicago & Rock Island track elevation at Oak Park, Ill., 1000 tons; R. H. Stearns Company, department store, Boston, 1300 tons; Lake Shore Railroad track elevation, Chicago, 1200 tons; Crane Company, Chicago, 2700 tons for a new plant at Oakmont, in the Pittsburgh District; Hermitage Hotel, Nashville, Tenn., 1000 tons. The cutting of prices continues. Some of the smaller fabricating plants, which have been operated nearly full throughout the year, are still making low bids to continue their present scale of operations through the winter. The leading interest will probably round out the year with a record of about half its production in 1907. Other companies have done much better in volume, and the total of fabricated material turned out will probably be 70 to 75 per cent. of that for 1907. We quote the New York market for plain material, shipped from mill, as follows: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2¼c.

Bars.—While the immediate demand for Bar Iron is light, owing to inventory season, conditions at the Eastern mills are much better from an operating standpoint than at any previous time in the year. The month of November was so much of an improvement over its predecessors in business booked that the mills are working up considerably closer to their capacity than for many months. Inquiries are excellent, and it would be an easy matter now to close good contracts for future delivery if Bar Iron makers were willing to meet the views of buyers as to prices. While some mills are quoting 1.51c., at tidewater, most of them are asking 1.56c., and it is probable that the latter would be the minimum rate if consumers were not disposed to buy Steel Bars with Iron Bars selling at the same price.

Plates.—A little improvement is noted in the inquiry, and the business of the past week was probably better from the standpoint of volume of business booked than its immediate predecessors. Prices are firmly held on Standard Sized Plates as follows, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

Ferroalloys.—Higher prices have been obtained for 50 per cent. Ferrosilicon. The price in Pittsburgh is now $67 to $70. Ferromanganese is firm at $45, but some sellers are nominally quoting higher figures.

Cast Iron Pipe.—Some demand for spring delivery is observed, but manufacturers of Pipe are quite cautious in taking business for delivery so far in the future. It is considered that a number of influences may operate to make sales of this character somewhat hazardous. The question of an advance in freight rates has some bearing, while the continued hardening of raw materials is another important consideration. Some of the manufacturers are of the opinion that it will be more prudent to pile up stock this winter and wait for the regular spring trade than to take orders at such prices as can now be secured, which may not show a profit at the time of delivery. Carload lots of 6-in. for immediate shipment continue to be quoted at $24 per net ton, at tidewater. The Board of Water Commissioners, Amsterdam, N. Y., has awarded to the leading Pipe interest the contract for furnishing 7398 tons of 24 and 30 in. Pipe.

Old Material.—The local market was quite active for several days in the past week, with a particularly good demand for Steel Scrap and rolling mill stock. Quiet conditions now prevail, however, and undoubtedly these will continue until after the holidays. The quietness is somewhat intensified by the attitude of the large Eastern Steel consumers, who have quite unanimously concluded to oppose the upward tendency of prices, as they are now naming a maximum considerably under the figures at which recent sales were made. The floating supply of all kinds of Scrap is scarce, however, and dealers who are holding good stocks seem to be able to maintain their position. Quotations are as follows, New York and vicinity, per gross ton:

Old Girder and T Rails for melting	$14.00 to $14.50
Heavy Melting Steel Scrap	14.00 to 14.50
Old Steel Rails, rerolling lengths	16.00 to 16.50
Relaying Rails	22.50 to 23.00
Old Iron Rails	19.00 to 19.50
Standard Hammered Iron Car Axles	21.50 to 22.00
Old Steel Car Axles	18.50 to 19.00
No. 1 Railroad Wrought	17.50 to 18.00
Iron Track Scrap	15.00 to 15.50
No. 1 Yard Wrought, long	16.50 to 17.00
No. 1 Yard Wrought, short	15.00 to 15.50
Light Iron	8.50 to 9.00
Cast Borings	10.00 to 10.50
Wrought Turnings	11.00 to 11.50
Wrought Pipe	13.00 to 13.50
Old Car Wheels	15.00 to 15.50
No. 1 Heavy Cast, broken up	14.50 to 15.00
Stove Plate	12.50 to 13.00
Locomotive Grate Bars	12.50 to 13.00
Malleable Cast	13.50 to 14.00

Iron and Industrial Stocks.

NEW YORK, December 16, 1908.

The market for all kinds of securities had shown decided improvement for several days since last week's report, but the movement appeared to culminate on Monday, temporarily at least, as quite a reaction took place on Tuesday. The predominating influences recently have been favorable, the announcement of advances in railroad rates January 1 being among the most stimulating of the news for railroad stocks. We have considerably extended the list of iron and industrial stocks usually quoted, and append herewith the highest and lowest prices on such stocks from Thursday of last week to Monday of this week:

Allis-Chalm., com.	15¾	16⅝	Pressed Steel, pref.	98	99¼
Allis-Chalm., pref.	50	52¾	Railway Spr., com.	43	47½
Beth. Steel, com.		22	Republic, com.	26¼	27⅝
Beth. Steel, pref.		53	Republic, pref.	86	86¼
Can, com.	9	9½	Sloss-Shef., com.	78	79¼
Can, pref.	75¾	76¾	U. S. Pipe, com.	29½	30⅞
Car & Fdry, com.	45¾	48	U. S. Pipe, pref.	76½	77½
Car & Fdry, pref.	108	108½	U. S. Steel, com.	53¾	55⅝
Steel Foundries	39	40¼	U. S. Steel, pref.	112	113⅛
Colorado Fuel	38¾	41	West. Electric	88	90⅝
Gen. Electric	158	160	Chic. Pneu. Tool		25⅞
Gr. North. ore cert.	72½	73¾	Am. Ship, com.		56
Int. Harv., com.	65	65½	Am. Ship, pref.	103¼	104
Int. Harv., pref.		108¾	Cambria Steel	38¾	40½
Locomotive, com.	55½	57½	L. S. Corp	12	13⅜
Locomotive, pref.		110	Penn. Steel, pref.	104	104½
Nat. En. & St., com.	12½	14¾	Warw. I. & S., com.		8
Nat. En. & St., pref.		*82¼	Crucible St., com.	8⅛	8½
Pressed St., com.	39¼	45	Crucible St., pref.	56	60

* Ex-dividend.

Prices on last transactions in active industrial stocks up to 1.30 p.m. to-day were as follows: United States Steel common 54¼, preferred 111⅝, bonds 102⅝; Car & Foundry common 47, preferred 108½; Locomotive common 56, preferred 110½; Colorado Fuel 38¾; Pressed Steel common 42, preferred 99¾; Railway Spring common 44; Republic common 26¼, preferred 86; Sloss-Sheffield common 78; Cast Iron Pipe common 29¼, preferred 76; Can common 9, preferred 74½, ex-dividend.

The Sloss-Sheffield Steel & Iron Company reports for the quarter ended November 30 (November estimated) as follows: Profits from operation, $493,935; three months' bond interest, $52,500; three months' proportion of taxes, $12,600; total deductions, $65,100; balance, $428,835, compared with $396,375 a year ago.

Dividends.—The Empire Steel & Iron Company has declared a semiannual dividend of 1½ per cent. on the preferred stock, payable January 1.

The American Iron & Steel Mfg. Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock and 1¼ per cent. on the common stock, both payable January 1.

The Nova Scotia Steel Company has declared the regular quarterly dividend of 2 per cent. on the preferred stock, payable January 15.

The International Nickel Company has declared a quarterly dividend of 1½ per cent., payable December 31.

Metal Market.

NEW YORK, December 16, 1908.

Pig Tin.—Probably the dullest week in the last half of the year has just passed. Inquiries have been few, and orders exceedingly meager. This may be accounted for partially because of the heavy buying of December Tin in October and November, which Tin is now being delivered. This will show up in the statistics, but if buying is no larger than it has been, it is improbable that deliveries will be large. Price changes during the week have been unimportant, the daily range being as follows:

	Cents.
December 9	29.00
December 10	29.12½
December 11	28.85
December 14	28.70
December 15	29.12½
December 16	29.10

The supply of Tin is ample, the arrivals so far this month being 1947 tons, and there are afloat for American ports 2350 tons. The London market is practically unchanged from last week, at £132 for spot, and £133 15s. for futures.

Copper.—The important happening of the week, and, in fact, the most important thing in the last half of the year so far, is the announcement of the incorporation of the Phelps-Dodge interests. This firm is the largest independent American producer of Electrolytic Copper. Business has been dull, although prices are but little changed from last week. The ruling quotation for Electrolytic is 14.12½c., and it is possible that exporters can do business at 14c. Lake Copper continues to be held at 14.50c. Trade in the line of finished products seems to be somewhat smaller, and Sheet Copper is not in such active demand as it was a month ago. These mills, however, are running full on old contracts. The exports so far this month amount to 11,982 tons. The London market for spot is 5s. lower than last week, at £62 7s. 6d., and futures are 7s. 6d. lower than last week, at £63 5s.

Waterbury Average.—The Waterbury average for November was 14.50c.

Pig Lead.—Numerous rumors are current in the market that Lead can be had very cheap, but the American Smelting & Refining Company continues to quote shipment Lead at 4.30c., New York, and independent sellers are quoting about the same price. Some soft Missouri brands are obtainable at 4.25c., but this is no great concession. In St. Louis the price rules from 4.10c. to 4.15c., according to grade. Compared with the rest of the market, Lead prices do not appear to be unduly high, but are influenced by the prospects of tariff revision.

Spelter.—The market is somewhat stronger, but business is exceedingly limited. Prime Western brands are quoted at 5.20c., New York, and 5.05c., St. Louis.

Aluminum.—No. 1 Ingots are quoted at 24c.; Rods and Wire, 32c., and Sheets, 34c.

Antimony.—The market is exceedingly dull, with prices unchanged from last week. Hallett's is quoted from 8.12½c. to 8.25c.; Cookson's, 8.37½c. to 8.50c., and Outside Brands, 8c.

Tin Plate.—Orders are coming into the mills more freely. Prices are firm at $3.70, Pittsburgh, and $3.89, New York, for 100-lb. I C Coke Plates. In Swansea Welsh Plates are unchanged at 12s. 1½d.

Old Metals.—Prices on copper bearing metals are stationary, but Old Lead is slightly easier. Business is of very small volume and largely originates and ends with dealers. Dealers' selling prices are quoted as follows:

	Cents.
Copper, Heavy Cut and Crucible	13.50 to 13.75
Copper, Heavy and Wire	13.25 to 13.50
Copper, Light and Bottoms	12.00 to 12.25
Brass, Heavy	9.50 to 9.75
Brass, Light	7.50 to 7.75
Heavy Machine Composition	12.50 to 13.00
Clean Brass Turnings	8.50 to 9.00
Composition Turnings	10.50 to 11.00
Lead, Heavy	4.15
Lead, Tea	3.90
Zinc Scrap	3.75

The British Iron Trade.

The more favorable reports received from the United States in the past month seem to be the chief reason for greater hopefulness in the British iron market. Little actual improvement in demand is apparent, and the pig iron market early in December was slightly weaker than in November. In the Cleveland District pig iron in second hands has been competing to some extent with iron sold by the furnaces, and No. 3 Cleveland iron sold at 48 shillings 9 pence in the first week of this month, while warrants were 48 shillings 7½ pence. West Coast hematite warrants were quoted at 58 shillings, a decline of 1 shilling from the previous week. November showed the largest increase in any one month since 1905 in the stock of Cleveland pig iron in Connal's stores. The total held at the close of the month was 106,024 gross tons, an increase of 17,523 tons. Since July 1 there has been a steady increase, the stock on that date being 47,949 tons, or the smallest since 1900. The exports of Cleveland pig iron were 98,758 tons in November, as against a monthly average for the year of 111,441 tons. In November, 1907—the best November on record—these shipments were 146,972 tons. Italy has been a good customer of the Cleveland District this year, taking 146,976 tons in the first 11 months, or far more than in any equal period. France has taken 92,736 tons, against 55,467 tons in the first 11 months of 1907.

The British shipyards have received a number of orders recently and on these there has been more strength in the plate and angle trades. Rail orders have increased and mills in the North of England are well occupied. On heavy section steel rails prices have ranged from £5 10s. to £5 12s. 6d., or from $1 to $1.50 below the prevailing price at American mills.

American and British Foundry Irons.

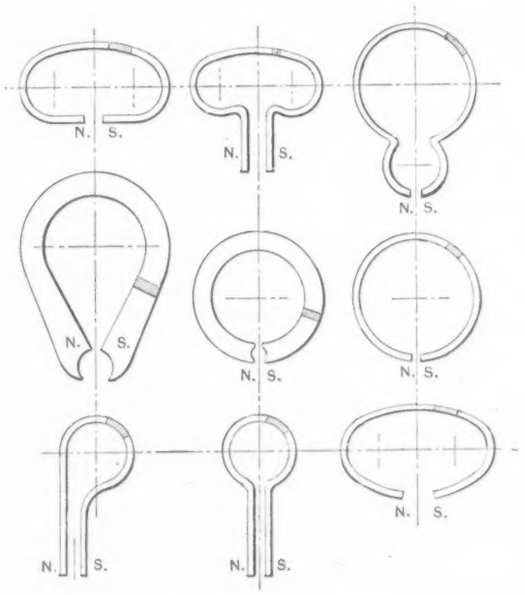
At the annual meeting of the Sheffield District branch of the British Foundrymen's Association at Sheffield, England, October 31, the president, Herbert Pilkington, made an address on "Foundry Pig Iron Specifications." The conditions in England and the United States, he said, are widely different, practically all the foundry pig iron in the United States being made from hematites. American pig iron is as a rule lower in silicon than British iron. Therefore, in the view of the speaker, the specifications prepared by American associations have little application in Great Britain. Chilled castings, such as rolls and car wheels, are made in the United States from charcoal iron derived from the smelting of hematite ores. In Great Britain the pig irons used for chilled castings contain up to 0.5 per cent. phosphorus, and, in the mind of the speaker, with much superior results. Mr. Pilkington also referred to the fact that American pig iron, while comparatively low in silicon, produced castings which in the main may be considered soft. He took some credit to the product of British foundries in the fact that foundrymen there are able to find materials which fulfill extreme conditions, between chilled castings on one hand and soft castings for machinery on the other, or in the matter of density between motor cylinders on the one hand and intricate art castings for ornamental purposes on the other.

The properties of the Tecumseh Iron Company, whose office is at Tecumseh, Ala., have been purchased by the Birmingham Coal & Iron Company, Birmingham. The Tecumseh properties consist of valuable brown ore mines, the output of which will be used in the manufacture of Vanderbilt pig iron.

Steel for Magnets.

The rapid increase of industries in which the magnetic properties of iron and steel are employed has made the study of these properties important. The different metals made use of because of their magnetic properties may be divided into two groups: In the first, a material is desired that can be instantly magnetized and that will lose its magnetism equally quickly; in the other, the material is required to retain its magnetism. This latter group constitutes the permanent magnets. Very little work has been done on the most suitable composition for these permanent magnets, so that a recent paper on the subject by G. Hannack is very welcome. It is published in *Stahl und Eisen*, August 26, 1908, p. 1237, and is translated in abstract below:

Steel is the only material suitable for these magnets. Usually the coercive force increases with the hardness, but at a certain point this is reversed. In ordinary steels, Madame Sklodowska Curie's statement is right, that the limit of carbon should be 1.2 per cent; in tungsten steels the limit is somewhat lower. Extraordinarily good results follow the use of tungsten, the amount of



Typical Steel Magnet Shapes.

which must be kept within narrow limits. Very often a good magnet steel is injured by the addition of a few more hundredths of 1 per cent. of that element. Naturally, the amount is kept as low as possible because of the high price of tungsten metal. It is not tungsten alone, however, that determines the excellence of a magnet steel, but rather the combined influence of various elements.

The Most Important Constituents.

Carbon and tungsten are the most important constituents, and the manufacturer must turn his attention to the correct proportion of these two elements, all others retiring more or less into the background. Manganese is supposed to decrease the coercive force or capacity, and all makers of magnet steel seem to advocate this theory. As a result of many trials, the writer believes that a higher percentage of manganese does not influence this property to any extent, but does injure the permanence, the property that enables the steel to retain magnetism. With a percentage higher than 0.20 to 0.30 the steel is easily magnetizable, but loses its charge rather quickly. Silicon is not harmful in small amounts, as may be seen in the following analysis of an excellent Böhler magnet steel, where the percentage is rather high:

	Per cent.		Per cent.
Carbon	0.60	Phosphorus	0.018
Tungsten	5.37	Silicon	0.26
Manganese	0.18	Copper	0.004
Sulphur	0.038	Chromium	None.

Sulphur and phosphorus should be low, and, in the proportions found in high grade steels, injure neither the coercive force nor the permanence. Copper is injurious, and on this point the opinion of other investigators must be contradicted. In plain carbon steels it may not be harmful, but in the case of tungsten steels, which alone are of practical importance, it is decidedly to be avoided. Nickel acts the same way as copper; even when added in minute quantities its bad influence is at once apparent.

Molybdenum may be used with good results, but its good influence stands in no relation to its high cost; disregarding this factor, its extensive use is prohibited because of the trouble in making and working the steel. It readily cracks in hardening, and when the endless different forms of magnets are pointed out every specialist will gladly renounce this material, for the even hardening of many of them is rendered difficult enough at the best because of the complicated tension strains.

Chromium is far inferior to tungsten in effectiveness and because of the increased hardness which it causes is to be avoided. Titanium decreases both the coercive force and the permanence, and on this account, as well as its high cost, is also to be avoided. Excellent magnets may be made from chrome-vanadium steel, the bad influence of chromium being overcome or at least decreased by the vanadium.

The whole work of the steel maker may be spoiled by the manufacturer of the magnets. Uneven hardening gives the most trouble. The accompanying illustration gives a few of the magnet shapes, showing what varied forms electrical science requires. These are turned out yearly by the hundred thousand by the large manufacturers. It is easy to see how difficult it is to obtain an even hardness with these various shapes without deforming or cracking the magnet.

Very large quantities of permanent magnets are used in the construction of telephones, and a great many for electrical counting and control machines. Wakening and alarm apparatus for hotels and houses take many, as do also block signals on railroads. Among more recent uses, a goodly number go to automobile manufacturers.

There are still many problems awaiting solution in this special sphere of steel making, problems which when solved will do a great service to that most modern of all large industries, the electro-technical. G. B. W.

Spang-Chalfant Improvements.—Spang, Chalfant & Co., Inc., Pittsburgh, operating the Etna Iron & Tube Works at Etna, Pa., are making some large additions to the works which will take several months to complete. These include the erection of a two-bay steel building over the 16-in. bar mill and the puddling mill and the remodeling of a present steel building. The latter building will be raised 6 ft. and equipped with crane runways by the John Eichleay, Jr., Company, Pittsburgh; it will cover a lap weld furnace making 4 to 12-in. pipe. A tube furnace making 1¼ to 4 in. tubes, and another making 3 to 6 in. tubes, are to be remodeled and each covered with a new steel building. The contract for the steel, about 250 tons, has been placed with the Wm. B. Scaife & Sons Company, Pittsburgh. Some excellent records for output in the rolling of ½-in. pipe have recently been made by these works, which are said to surpass any previous records made for rolling this product.

The United States Government has just placed in commission the second of the two gigantic hydraulic dredges required for service in the Gulf of Mexico. A noticeable feature of both of these ships, the General C. B. Comstock and the Galveston, is the fuel. Oil is used as the only fuel, the entire equipment being furnished by Tate, Jones & Co., Inc., Pittsburgh, Pa., makers of the Kirkwood burners. The later of the two dredges, the Galveston, is of 2000 indicated horsepower capacity, four boilers being required. This ship was built after a thorough test of the General C. B. Comstock—built some six years ago and also equipped entirely by Tate, Jones & Co., Inc. The advantages found by the Government are economy in fuel cost, labor, space and time, greater mileage, lightness and perfect control over the fire.

German Interests to Control United-Otto By-Product Coke Ovens.

As the result of negotiations begun early in the present year, announcement was made this week of the sale by the American Coal Products Company, 17 Battery place, New York, of its by-product coke oven interests, represented by a subsidiary organization known as the United Coke & Gas Company. The purchaser is the Oberschlesische Kokswerke & Chemische Fabriken Aktien Gesellschaft of Berlin, Germany. The transfer will take place January 1, 1909, and a new company to be known as the German-American Coke & Gas Company will be organized, with headquarters at 17 Battery place. This company will take over the by-product coke oven and other patents comprising the Otto-Hoffmann and United-Otto system of construction, hitherto exploited by the United Coke & Gas Company. In accordance with this system some 2500 by-product coke ovens, over half of the total number existing in the United States and Canada, have been built. Methods for successfully obtaining illuminating gas as a by-product from retort coke ovens have been developed and introduced by the United Coke & Gas Company, a feature that has greatly increased the revenue from the by-products.

The capital of the German-American Coke & Gas Company will be $2,000,000, of which $500,000 is to be paid in in cash at once and the paid in capital will be increased to $1,000,000 as soon as the needs of the business may require. The board of directors will consist of the following:

Baron Fritz von Friedlaender-Fuld, chairman of the Oberschlesische Kokswerke & Chemische Fabriken.
A. Zindler and A. Northman, vice-presidents of the Oberschlesische Kokswerke & Chemische Fabriken.
Dr. F. Schniewind, vice-president of the United Coke & Gas Company.
Henry H. Wohrhane of Hallgarten & Co., bankers, New York.
E. Thalmann of Ladenburg, Thalmann & Co., bankers, New York.
Thos. M. Rianhard, vice-president and treasurer of the United Coke & Gas Company.
W. H. Childs, vice-president of the American Coal Products Company.

The officers of the new German-American Coke & Gas Company will be: W. H. Childs, chairman; Dr. F. Schniewind, president; A. Zindler, vice-president; F. Moser of the Oberschlesische Kokswerke & Chemische Fabriken, secretary and treasurer. Director Wilhelm Altpeter, the head of the construction and operating departments of the Oberschlesische Kokswerke & Chemische Fabriken in Europe, will act as consulting engineer for the new company.

The American Coal Products Company, which will have a stock interest in the new company, was incorporated in New Jersey in February, 1903, and purchased all the stock of the United Coke & Gas Company, as well as nearly all the stock of the Barrett Mfg. Company. The main business of the company, as carried on through the last named subsidiary, is the manufacturing of coal tar products, pitch, roofing felts, &c., and it will now confine itself to these products and ammonia. It has an authorized capital stock of $15,000,000 in $100 shares, and there is $10,284,000 outstanding. I. D. Fletcher is chairman; George W. Elkins of Philadelphia is president; W. H. Childs and Stephen Peabody, vice-presidents; T. W. Weeks, treasurer; E. H. Kidder, secretary, and E. J. Steer, assistant secretary and assistant treasurer. The directors are Eversley Childs, W. H. Childs, I. D. Fletcher, E. H. Kidder, Emerson McMillin, Stephen Peabody, T. M. Rianhard, F. Schniewind, H. S. Ehret, Michael Ehret, G. W. Elkins, Powell Stackhouse, G. D. Widener, S. H. Bingham, William Flinn, P. S. Marquis, A. T. Perry, R. C. Pruyn, J. C. Runkle and E. H. Wardwell. The Barrett Mfg. Company has marketed the tar and ammonia from most of the by-product coke oven plants in the United States.

The Oberschlesische Kokswerke & Chemische Fabriken has a capital stock of 18,500,000 marks ($4,403,000) and has been very successful in its operations, paying a dividend of 11 per cent. on the capital stock last year. It owns and operates several coal mines, by-product coking plants, ammonia and benzol recovery plants, chemical works, a blast furnace, iron works, machine shops, &c., in the well-known coal districts of Southeastern Germany and Austria. It is engaged in the construction of coke oven plants for other concerns as well as for itself. Of these it has built a number, aggregating 2021 ovens, in Germany, France, Austria, Italy and Russia, and has now in hand or on order plants amounting to nearly 600 ovens. The company employed over 4200 men at the mines and coke works in 1907. The company is making the investment in this country in view of the large field yet to be occupied by the by-product coke oven. In Germany the beehive coke oven has practically passed out of existence, and the extension of the by-product industry is therefore limited to the formation of new coke companies. In the United States, on the other hand, the by-product oven has yet a great opportunity for expansion, and the new company has some negotiations on foot of which definite announcement is expected in the near future.

Buffalo-Susquehanna Improvements.

The Buffalo & Susquehanna Iron Company has purchased 30 acres of water front property adjoining its blast furnace and ore docks on the Union Ship Canal, Buffalo, N. Y. On the land acquired the company will build an extension of its ore docks at a cost of $200,000. When completed these ore docks will with those at present in use be among the largest on the lakes, and will have a bed of solid rock upon which any load can be piled without danger of overloading. The purchase was made and the extension will be built in the name of the South Buffalo Canal & Dock Company, a subsidiary company just incorporated with a capital of $500,000, with the same management and Board of Directors as the Buffalo & Susquehanna Iron Company.

The length of the new dock and ore bins will be 950 ft. The immediate purpose of the construction of the new dock is to afford additional room for storage and added facilities for shipment to the Eastern and Southern market of the iron ore which the Buffalo & Susquehanna Iron Company mines in excess of its own requirements at its Buffalo blast furnace and eventually to supply additional blast furnaces which the company plans to erect on the 30 acre tract purchased as soon as the tributary market has expanded sufficiently to absorb their product. The officers of the new or subsidiary company are as follows: Wm. A. Rogers, president; Stephen M. Clement, first vice-president; Charles W. Goodyear, second vice-president; Hugh Kennedy, general manager.

Experiments are now being made at the Elmira Heights Rolling Mills, Elmira, N. Y., covering a process of welding steel scrap in making new billets. Tests have been made by taking a quantity of old steel rails and wagon tires, making a bundle of them and putting it in the heating furnace. At the proper time a powder is thrown into the furnace, the mass is welded together, and the result is said to be the production of a perfect billet. This powder or compound is the invention of Henry Harris, a local rolling mill worker, who has placed it in the hands of Charles Rosenbloom of Elmira. The compound differs from ordinary welding compounds in being applied before the product is taken from the furnace, after which the welded scrap is rolled into billets by the regular process. A company will be formed for the purpose of engaging in the business of converting old steel rails and steel scrap into billets for commercial use by the new welding process.

The various sales agents, nearly 40 in number, of the Jones & Laughlin Steel Company, Pittsburgh, held their annual reunion in that city last week. The day sessions were given over to discussing plans and policies for the coming year, while in the evenings entertainment was provided. The conference concluded with a smoker at the Duquesne Club.

The Machinery Trade.

NEW YORK, December 16, 1908.

Machinery men are somewhat encouraged over the fair demand for machine tools the past week, especially in view of the fact that this is usually a dull period of the year. While business with some houses has held up well the past few weeks and in instances a gradual weekly increase was noted, trade with others was spasmodic. Since our last report, however, a buying movement developed that extended to a great majority of the dealers and manufacturers. As yet the buying has only covered small lots of tools for industrial plants, the railroads being an unimportant factor in the market. No large machine tool requirements are reported from the leading interests. Inquiries in hand are also from scattered sources and cover generally a few tools each. A feature of the trade was the buying of second-hand machinery, principally for shops in the South. One of the larger houses closed out a good line of such equipment, which included several large planers, lathes and other heavy machines. It has been some time since there has been an active demand for second-hand tools.

It is encouraging to note at this time that export trade has continued fairly steady during the last few months, and the inquiries now before the general machinery trade from export sources are fairly good for this time of the year. Foreign business has by no means fallen off in comparison with domestic demand, and while the buying has included no large lots there have been some liberal purchases of general machinery for export. One machinery house which deals largely in special equipment, such as is used by manufacturers of hardware and metal specialties, has recorded several nice orders for special machinery of late, and has at present on hand more foreign inquiries than it has received for several months past. Most of the buying is being done through export houses rather than direct, and export men state that they are now better able to give their foreign customers good satisfaction than they have been in several years. They claim that with a large demand from this country manufacturers are prone to make export inquiries, and in consequence export men have some trouble in satisfying their customers. With conditions as they are now export men state that the advantageous terms they can make regarding deliveries secures for them follow up orders which sometimes amount to very good business.

Victor Beutner, engineer of the Altoona Portland Cement Company, Altoona, Kan., will shortly send out inquiries for the following equipment and material which will be purchased for the new plant of the Lumbermen's Portland Cement Company, which is to be erected at Carlyle, Kan., near Iola, on the main line of the Atchison, Topeka & Santa Fé Railroad: 640 tons structural steel for buildings, five 8 x 125 ft. rotary kilns, grinding equipment for raw and finished material to take care of the capacity of 4000 bbl. per day, four 550-hp. natural gas engines, one No. 8 gyratory crusher, three intermediate crushers, four 412-kw. alternators, 3000 hp. of motors in various units, conveying and elevating machinery, quarry and sacking equipment, &c. The plant will have a capacity of 3600 bbl. a day and work of construction will be started immediately. Mr. Beutner also has plans for the erection of a 3600-bbl. plant for the Union Portland Cement Company, to be constructed at Gas, Allen County, Kan., where it owns large mineral deposits and gas rights. For the new plant of the Union Portland Cement Company, construction of which will start early next year, an equipment will be purchased similar to that required for the Lumbermen's Portland Cement Company. The plant of the Altoona Portland Cement Company, which was also constructed under the supervision of Victor Beutner, contains many novel features in cement practice and is now being put in operation. The ground for this plant was broken in May and its erection in seven months is considered a remarkably fast piece of work.

A large order for cement machinery has been placed with the Robert Wetherill Company, Chester, Pa., by the Allentown Portland Cement Company, Allentown, Pa. The equipment, which will cost about $100,000, will be used in the new cement plant which is to be built at Evansville, Pa., by the latter company. It is understood that the Allentown Portland Cement Company will erect another cement plant at Allentown after the one at Evansville has been placed in operation.

The Harlan & Hollingsworth Corporation, Wilmington, Del., has placed an order with the Pusey & Jones Company, Wilmington, Del., for the new machinery it will require for its new underframe shop, the erection of which will be started shortly after the first of the year.

The establishment of trade schools has necessitated the purchase of a great deal of mechanical equipment, and many manufacturers consider it of considerable importance to have their machines in schools where mechanics can become familiar with their operation. Through the office of the Attorney General the State of New York has purchased 600 acres in Yorktown, Westchester County, where a State training school will be erected next spring. As it is the intention to teach various trades in the school, it is probable that a complete mechanical equipment will be installed. In this connection it is of interest to state that the Williamson Free School of Trade, Philadelphia, Pa., is buying a few new machines to enlarge its equipment.

Machinery is now being purchased by the Heine Safety Boiler Company, St. Louis, Mo., for its new boiler works, which are to be erected at a cost of about $300,000. The company has purchased considerable of the equipment and has decided upon what additional machinery it will buy. The plant will consist of a main building, 140 x 400 ft.; flange shop, 60 x 180 ft., and a power house, 75 x 80 ft. As soon as the buildings are ready for occupation the present plant will be abandoned.

The John Hoffman Company, showcase manufacturer, 32 South Water street, Rochester, N. Y., has had plans prepared for the construction of a new factory building to cost about $80,000. Preliminary bids are now being received by the owner covering the construction of the building and equipment. The equipment to be installed will consist of two 125-hp. horizontal tubular boilers, one 125-kw. direct connected engine driven generator, one 200-hp. engine and a complete line of motor driven woodworking machinery.

The Department of Public Charities of the City of New York will receive bids until December 23, at its offices at the foot of East Twenty-sixth street, for material comprising a complete electric lighting and power system for furnishing light and power for a number of buildings under its jurisdiction on Blackwell's Island

It is likely that within the next few months bids will be asked for at least the first portion of the Fourth avenue subway in Brooklyn. At a meeting of the Board of Estimate a motion was adopted that the Public Service Commission be requested to invite bids for the first section of the subway, which is to extend from Flatbush avenue and Fulton street to the entrance of the Manhattan Bridge.

Contractors are to have another opportunity to bid on the construction of a new double electric elevator in Prospect Park on the State Reservation at Niagara Falls. For this work there is about $104,000 available. Some few days ago the commissioners opened three bids submitted, and each offer was found to be much higher than the fund available. Inasmuch as the service of the proposed elevator is greatly needed to replace the condemned inclined railway, the commissioners held a conference with the State Architect, and it was decided to cut out much of the ornamental work in the original plans and then invite new bids, which it is expected will be within the appropriation. For the purpose of calling for these new bids, the commissioners will meet the latter part of the present week to approve the revised plans and name a date for receiving bids. Superintendent Edward H. Perry, Niagara Falls, N. Y., has all the information required by bidders.

Business Change.

Schuchardt & Schutte, the well-known machinery house of Berlin, Vienna, Stockholm, St. Petersburg, Copenhagen, Budapest, London, New York and Shanghai, announce that they have opened a branch under their own name for the sale of machine tools, woodworking machines and small tools at 14 Akashicho Tsukiji, Tokio, Japan. While Schuchardt & Schutte have been closely affiliated for several years with the machine tool trade in Japan through their direct representatives, the establishment of a branch selling organization is a further step in the expansion of the export trade in American machine tools, with which this firm has been so directly identified. The Tokio branch is under the management of James G. Brown, who has spent several years in the Far East in the interests of the firm.

Chicago Machinery Market.

CHICAGO, ILL., December 15, 1908.

From the way business has been coming in since the first of the month, it looks as though the accentuated dullness expected in the machinery trade through December will hardly be realized. There has been all along but little dissent from the opinion that business would start off well soon after the first of the year, though not much activity was looked for this month; but instead of a dropping off in sales, business of unexpected volume has developed. This is all the more significant, since the character of orders and the sources from which they come remain the same; that is to say, that while a few of the larger industrial concerns are represented among the buyers, business as a whole is largely comprised, as it has been for some months past, of a widely diversified demand, in which is included not many orders of large size. An encouraging feature in this connection is noted in the reports of dealers respecting industrial conditions in territory contiguous to this market. It is stated by a leading machinery house, that advices from

its representatives indicate that shops and factories in Iowa, Wisconsin, Michigan and the Northern portions of Illinois and Indiana are now fairly busy, many of them, especially in the agricultural districts, working night and day shifts. As a result, orders for tools, the purchase of which has been delayed for many months, are coming out. Illustrative of the trend of trade in the past 10 days, is the statement made by a local machine tool interest, that its sales thus far this month have exceeded by a fair margin those of any other month since the panic; and that this entire volume of business was made up of comparatively small orders, and was not due to the fortunate closure of one or more deals of special size. This measure of increase, it is true, is not representative in all cases of the business done by other houses, but there is general agreement in the fact that unlooked for improvement has been experienced.

The demand for other lines is holding up fully as well as was anticipated. Steam generative and motive power equipment is lagging somewhat, but the builders of gas engines, especially in small units, are gaining ground, and are moderately busy. The demand for electric motors and generators is gradually widening in volume. The use of lifting magnets is steadily extending, and among recent orders placed are several for the handling of material in steel plants where the efficiency of their service is well established.

The Straubel Machine Company, Green Bay, Wis., maker of marine gasoline engines, has completed and is now occupying a new brick shop building with a saw tooth roof supported by a steel frame. In addition to its present equipment, the company expects to install some additional machinery, including a new lathe and drill.

A new factory for the manufacture of the Burgess double tension automobile spring is being established at Wenona, Ill., by Robert Burgess & Son. The building is nearly completed, and the firm will be ready to purchase machinery and other equipment within the next 90 days.

Through the sale of bonds, funds have been provided by the city of Eugene, Ore., for the construction of a hydroelectric power plant on the McKenzie River, about 15 miles from the city. Water will be conveyed to the plant through an open ditch about 3½ miles long and 20 ft. wide at the bottom, which will provide an effective head of about 45 ft. The equipment will consist of 600-kw. three-phase 60-cycle generators, direct connected to turbine water wheels, in addition to which a transmission line 15 miles in length will be required. Bids for the machinery and construction of the canal will be asked for within the next two or three weeks.

The town of Minco, Okla., is contemplating the installation of a water works and an electric light plant, for which purpose the proposition of a $10,000 bond issue will be voted on to supplement an issue of like amount already out. It is stated that the bonds have been placed contingent upon the approval of the electors, in which event a supervising engineer will be selected to prepare plans for the required machinery and equipment.

A franchise to build and equip a water works, sewerage system and electric light plant, has been granted by the town of Scottsburg, Ind., to C. W. Kelley, manager of the Rule Engineering Company, Louisville, Ky. In addition to these plants, the installation of an ice plant is also contemplated.

In consequence of some alterations being made in the municipal electric light plant, Ottawa, Kan., an additional generator is required, a good second-hand machine being preferred, the capacity specified being 110 kw., 60 cycle, 2 phase, 1100 volts, with a range of speed from 250 to 550 rev. per min. Other conditions being right, a unit with a trifle greater or a little less capacity might be used. The city water and light department, J. H. Bell, secretary, is in the market for the immediate purchase of this generator.

The Standard Electric Company of Dakota, with headquarters at Lakota, N. D., has been organized with a capital stock of $50,000, and will devote its attention to the establishing, building and equipping of power plants in the Northwest. It will begin operation by the installation of a light and power plant at Lakota, the equipment for which has been purchased from the Northwestern Electric Equipment Company, St. Paul, Minn., with the exception of boilers and two units of 85 hp. each, which were supplied by the Fargo Foundry Company, Fargo, N. D.

Tenders, receivable up to December 28, are being asked by the Board of Control, Winnipeg, Manitoba, Canada, on material and equipment for the completion of an electric power project now in the course of development by the city of Winnipeg, the ultimate cost of which is estimated at $3,250,000. Something like $500,000 has already been spent on these works, which includes the construction of a tramway, now practically completed, from Lac du Bonnet to Point du Bois. Work is now proceeding on the earth and rock excavation at the power site, which is located at Point du Bois, and the erection of a telephone line from their to Lac du Bonnet, a distance of 23 miles. The equipment required includes power station machinery, steel towers, transmission line and transmission cables. The engineers in charge of the work are Smith, Kerry & Chace, and the consulting Board of Engineers is composed of William Kennedy, Jr., Montreal; Prof. L. A. Herdt, Montreal, and Col. H. N. Ruttan, city engineer, Winnipeg.

Cincinnati Machinery Market.

CINCINNATI, OHIO, December 15, 1908.

The middle of the last month of the year finds a situation of hopefulness and confidence in the minds of local tool manufacturers, with but little early business in sight, and the usual ante-holiday slump on in earnest. Among the manufacturers of the lighter tools and miscellaneous machinery equipment the situation is better in that orders are coming out in sufficient volume to warrant a gradual resumption of working forces and hours and the year rounding out in normal form. In the first mails of Monday morning came to one of the largest local tool manufacturers the first list of tool requirements for a big railroad shop that has been received for over a year. It is of good proportions and from one of the Western roads. While the list is a splendid one and is the best inquiry of the year probably, there is no promise of an early purchase.

Interviews with leading tool manufacturers show that the improvement of the past three months has been quite general, and that while December so far has not been up to November's standard for the same period, the character of correspondence is indicative of a good opening for January. Those manufacturing material and devices used in railroading have been the last to show evidences of recovery, and with some, such as those making frogs, patent switches, &c., there is still very much room for improvement.

The jobbing foundries are buying some iron, and those making miscellaneous castings, such as grate bars and other items for the gas companies, are busy. Opinion of the foundrymen making a specialty of castings for the machine tool industry is divided. Some maintain that there is no evidence of improvement as yet, while others say they are working full time, with very nearly their normal forces. One of these latter mentioned which makes bases, housings, &c., for the largest local planer, lathe and shaper manufacturers, is utilizing its full pit capacity and turning out some of the largest castings ever produced for the trade.

There are no specially encouraging signs in foreign trade in tools. Such sales as are being made for foreign shipment just now are usually of the lighter and less expensive types of tools. The local machine tool interests are taking a keen interest in the tariff hearings at Washington. They are somewhat divided as to the establishment of a maximum and a minimum rate, with the preponderance in favor apparently of a relatively higher duty on less expensive tools of foreign manufacture, which under some circumstances might become formidable competitors of the American makes.

Word from Marion, Ind., indicates that the Marion Malleable Iron Company is now running with almost a full force, and day and night shifts are maintained. For nearly a year the plant was run with a small force.

The Bucyrus Steel Casting Company, Bucyrus, Ohio, is gradually increasing forces and time. A recent order of good size was for a lot of 15-ton bed plates for a southern Ohio manufacturer of drills.

The Western Motor Works, Logansport, Ind., is enjoying a pleasing run of prosperity, maintaining night forces and working to full capacity. The company manufactures engines for automobile installation.

The C. E. Morris Company, Columbus, Ohio, making a specialty of structural iron and steel, is reported to be enjoying a steady run of business, with some good inquiries for material to be used in building in the spring. The plant is running on full time, double turn.

The Kenton Gas Engine Company, Kenton, Ohio, reports a gradual increase in orders and prospects good for the new year. It has made additions to its line recently of 2 hp. convertible hopper cooled and tank cooled and 24-hp. horizontal and 15 and 25 hp. horizontal engines. The company is operating on full time, and is in the market for a boring mill and a lathe.

New England Machinery Market.

BOSTON, MASS., December 15, 1908.

Machine tool dealers have done a fair business, mostly in small lots. Inquiries continue active, but buyers are not hurrying to place their orders, and the trade is reconciling itself to the probable fact that the machinery business is not to pick up quite so rapidly as was expected at election time. The machinery market must always wait until the business of its customers has reached close to maximum of production under existing equipment. There has been a slight let-up to general manufacturing, taking it as a whole, during the fortnight now ending, probably resulting from the fact that the year is closing, and that inventories are being taken in all kinds of business establishments. Therefore, there is little tendency to place orders for machinery, and the same general condition exists in the supply trade. However, it

is probable that all dealers are now doing business at a profit, which has not been the case during some months of 1908, and that the general trend of things is upward. The only question in the minds of merchants and manufacturers is as to how soon the great revival of business will be felt.

The New Britain Gas Light Company, New Britain, Conn., will increase its capital stock from $300,000 to $400,000, the new funds to be devoted to enlargement and extension of the plant.

The new Pope Mfg. Company, which will take over the business long operated under that name as a New Jersey corporation, has been incorporated in Connecticut with capital stock of $6,500,000. The incorporators named in the certificate are Albert L. Pope, George Pope, Charles E. Walker and Wilbur C. Walker. The directors elected at the first meeting were: For one year, Harry Bronner, Frederick H. Ecker, August Heckscher; for two years, Lewis H. Freedman, Albert Stickney, A. W. Pope; for three years, Henry V. Poor, A. L. Pope, Milton Ferguson. The receivership will end in a few days when the creditors of the company will have been paid in full.

In regard to the new plant of the John T. Young Boiler Company, to be erected at Norwich, Conn., the company states that land has been secured as stated, and the company contemplates moving there and erecting a foundry for the manufacture of its castings, which at the present time are being furnished by outside parties.

The Bannatyne Watch Company, Waterbury, Conn., has extended its factory by taking a lease of a part of the premises formerly occupied by the Cross & Spiers Company. The company states that at the present time it is not in the market for machinery.

The Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass., has brought out a new engine lathe, containing a number of new features. It is a single pulley drive, all geared head machine, an important part of the head mechanism being a new "cushion" clutch. The end feed is new, and the device for fastening the tailstock to the bed is a novelty. Another innovation is a patent thread indicator.

The Excelsior Needle Company, Torrington, Conn., has purchased the business of A. H. Smith & Co., New Haven, Conn., manufacturer of needles, and has moved it to Torrington. The Excelsior Company wishes it stated that the acquisition of the business will not necessitate the purchase of new machinery of any sort.

The Whitlock Coil Pipe Company, Hartford, Conn., has completed its new brass foundry and has begun its operation. The plant is furnished with the latest equipment of all sorts for the manufacture of brass and composition castings.

The plant of the Eastern Shipbuilding Company, Groton, Conn., opposite New London, will be sold at auction by J. C. Conant & Co., Lowell, Mass., December 29, 30 and 31. The equipment has been divided into 2200 lots and catalogued. The yards were established for the construction of the great freight steamships Minnesota and Dakota, and include a complete machine shop, plate bending rolls, blacksmith shop and a building filled with pneumatic machinery.

The new mills of the Amoskeag Company, Manchester, N. H., mention of which was made last week, will consist of a building, 100 x 700 ft., with 200 ft. wings of the same width at each end. The building will be at least five stories, and will contain about 12 acres of floor space. It will be of mill construction. It is probable that steam power will be used, which will undoubtedly necessitate the establishment of a large power plant. The Lawton Cotton Mills Company, Plainfield, Conn., will erect a new weave shed, 155 x 227 ft., and a mill, 105 x 182 ft., and three stories. The Upson-Martin Company, Thompsonville, Conn., rug manufacturer, is planning a three-story brick mill, 44 x 151 ft. The Wanskuck Company, Mohegan, Conn., will build a two-story addition. The Harding-Whitman interests, New Bedford, Mass., will build a new mill to contain from 60,000 to 75,000 spindles, according to a report from that city. Joseph Benn & Sons, Providence, R. I., are planning a five-story extension of their plant. Other large textile interests of New England are contemplating important improvements, which will constitute an important market for the supply trade and a not inconsiderable demand for machine tools.

The Brosnihan Wrench Company, 31 Hermon street, Worcester, Mass., is increasing its machinery equipment and is manufacturing on a larger scale, its product being a new pipe wrench. The company has recently reorganized, with J. W. Clark as president and manager and E. F. Brosnihan, treasurer.

E. W. Bemis, 92 West street, Worcester, Mass., is bringing out a new hexagonal milling machine for milling the heads of hexagonal nuts. The first machine of the line has just been completed at the shops of J. E. Snyder & Son and has been put to practical work in one of the large works of New England. The machine produces at the rate of 240 ¾-in. nuts an hour.

The Goodell-Pratt Company, Greenfield, Mass., manufacturer of hand working tools, has awarded the Aberthaw Construction Company, Boston, Mass., the contract for the erection of a new foundry. The building, which is to be 75 x 120 ft., will be constructed of reinforced concrete throughout and provided with metal sash. The working floor will have a clear span of 44 ft.

The A. Burlingame Company, 22 Cypress street, Worcester, Mass., manufacturer and dealer in steam, gasoline and other engines, and dealer in general supplies, such as boilers, piping and plumbers' goods, was burned out of its place of business December 8, at an estimated loss of $40,000.

Cleveland Machinery Market.

CLEVELAND, OHIO, December 15, 1908.

Local machinery houses report less activity during the past week than during the two or three preceding weeks, but while orders have fallen off there is a good volume of inquiries. These are coming from all classes of manufacturing concerns and are mostly for medium sized standard tools. The lull in buying is attributed to the fact that the majority of the buyers who are now making inquiries will wait until after the first of the year before placing their orders. The satisfactory number of inquiries makes dealers hopeful of a good volume of business early in January. Among the new inquiries are two for considerable iron and wood working machinery for new manufacturing plants for which it is expected that equipment will be purchased soon. During the past year very few new plants have been started up in this city, and the surrounding territory, but the outlook for the building of new industrial establishments shows considerable improvement. A fair volume of orders and inquiries are now coming from makers of automobile parts, the majority of whom have a large amount of work on hand and find it necessary to add somewhat to their equipment. This has resulted in a good demand for gear cutters and for furnaces for core hardening, tempering and annealing.

Builders of machine tools report a slow but steady improvement in orders. Some are now operating their plants at 75 per cent. or more of their normal capacity, and others, while not making as good a showing, are employing twice as many workmen as they were a few months ago. Some machine tool builders that a few months ago were making little but special machinery, and machine parts for stock, are now working entirely on their standard lines of machine tools. While some orders for machine tools for shop equipment are coming from the railroads, the buying by the railroads has not as yet extended to heavy handling machinery. Builders of that class of machinery are getting practically no inquiries from the railroads, but they report an improvement in inquiries from other sources, particularly from coal mining companies. There is some improvement in inquiries for cranes, but sales are still mostly small single cranes.

Second-hand tools are rather scarce, and nearly all that are being offered to dealers are held at high prices. Those that are being added to dealers' stocks are for the most part tools that are being taken in exchange for new tools.

In the foundry trade an improvement is noted in the demand for light gray iron castings, but the demand for heavy castings shows little, if any, improvement.

The Foote-Burt Company, Cleveland, maker of drilling machines and bolt and nut machinery, reports a steady improvement in orders, and is very optimistic over the outlook. The company has been gradually increasing its working force, and is now running its plant at 80 per cent. of its full capacity, and is not promising delivery within 90 days on some of its heavy machinery. The class of buyers and the kind of orders received by this company have entirely changed within the past 60 days. During the summer orders were almost entirely for special machinery. Now, practically all the orders are for the standard line of tools, mostly drilling machines. Some orders and inquiries are coming from concerns that have not been in the market for several months. The company has recently received some orders from railroads for large machines.

The Brown Hoisting Machinery Company, Cleveland, has received an order from the Lidgerwood Mfg. Company, New York, for six large Brown buckets for a cableway for which the Lidgerwood Company recently received a Government contract for erection in Panama. The Brown Hoisting Machinery Company reports an improvement in small orders and a better inquiry for heavy handling machinery for coal mines, but that practically no inquiries are as yet coming from the railroads for heavy handling machinery.

The Burt Mfg. Company, Akron, Ohio, has just received an order for two large exhaust heads for installation in new power houses that are being built in Panama, and has recently supplied the Government with filters for other power houses. The company reports both its foreign and domestic business as satisfactory. It recently received a third order from Canton, China, for 34 ventilators, one from Kobe, Japan, for a number of Burt ventilators, and one from its London, England, agent for ventilators for installation in a new Carnegie Library in that city.

The B. F. Sturtevant Company, through its Cleveland office, has closed a contract with Pickands, Mather & Co., Cleveland, for two 20-kw. lighting sets for installation on

the properties of the Syracuse Mining Company and the Bangor Mining Company, at Biwabik, Minn. These sets consist of the Sturtevant Company's latest type of vertical inclosed automatic engine, direct connected to and mounted on the same base with six-pole direct current generators, wound for 400 r. p. m.; engines operating at 150 lb. steam pressure, noncondensing. Owing to the complete stock of frames and parts shipments will be made in two weeks from receipt of order.

A new plant, to be known as the Vulcan Gear Works, is being established in Detroit, Mich., for the manufacture of cut gears of all kinds. Complete equipment for the plant is being furnished by the Modern Machinery & Engineering Company, Cleveland. The equipment consists of gear planers, gear cutters, hobbing machines, Potter & Johnson automatic machines, grinders and special machines for this class of work, and also a plant for heat treating, tempering and core hardening. The officers of the new company are: Jos. M. Hibbard, president, and T. H. Libbey, secretary and treasurer.

The National-Acme Mfg. Company, Cleveland, reports a gradual improvement in orders for automatic machinery, and the working force at the plant is being increased from week to week. It is now running its plant at double the capacity at which it was operated during the spring months.

The Ferro Foundry & Machine Company, Cleveland, builder of marine motors, already has enough orders on hand to insure it a good business during the coming season. Its foreign as well as domestic orders show an improvement. In addition to its regular line this company is preparing to place on the market a small, light stationary gasoline engine, intended particularly for farm purposes.

The Meiling Safe Company, Toledo, Ohio, which decided some time ago to build a new plant in order to increase its capacity, has finally decided to locate in Monroe, Mich., where it is announced the erection of a new plant will soon be started.

The Cleveland Round Stove Company has been incorporated to place a new heating stove on the market. The company is located at 5514 Bridge avenue.

The Cleveland Castings Pattern Company reports considerable improvement in the business outlook. This company has recently taken some good orders for stove and furnace pattern, and has just received a large order for patterns for fittings from the Detroit Valve & Fittings Company, Detroit, Mich.

Philadelphia Machinery Market.

PHILADELPHIA, PA., December 15, 1908.

Characteristic end of the year dullness is to be noted in the local machinery market, both merchants and manufacturers finding it somewhat difficult to close up business under consideration, owing to the fact that many prospective purchasers are preparing for their annual stock taking, and will not place any further orders or take any equipment during the short period remaining before the close of the year. For the same reason probably a falling in inquiries is to be noted, but, as this is the rule rather than exception at this season, little attention is paid to the decline, as it is expected that shortly after the turn of the year buyers who have contemplated making purchases will come before the trade and sales will be made without the hesitancy which has characterized so many purchases during the past few months.

The week's sales, as reported by both dealers and makers of machine tools, average about the same as the past few weeks, being confined largely to propositions of the smaller class, usually single tools required for the economical production of certain classes of work for which orders have been recently booked, and come mostly from the smaller sized plants. The larger concerns still have a large proportion of idle machinery in their shops, and until they become more fully occupied can hardly be expected to be very active buyers. Little of interest has developed recently in this market, as far as the railroads are concerned. Some business is in prospect in the northern part of the State, but as far as the roads entering this city are concerned very little is expected in the near future, inasmuch as their own shops are not yet fully and regularly in operation. It is, however, believed that with the placing of more general business, which will no doubt develop before very long, the situation will be improved and will result in both direct and indirect benefit to the machine tool trade. A prolonged discussion on tariff revision will have a detrimental effect on the trade, and will, it is believed, retard action on the part of at least some concerns having aggressive policies in contemplation, which will be further held up until it is seen just what will be done in regard to changes in the present import duty.

Manufacturers of machine tools and industrial plants generally report conditions largely unchanged. There has, if anything, been a decline in the volume of new business when compared to that which was transacted during November. In a majority of instances, however, order books are in somewhat better shape, and no particular movement in the demand is expected until early next year.

A fair week to week business is reported by second-hand machinery merchants, but this branch of the trade also feels the effect of the usual slowing down in buying as the end of the year approaches. Sales recently have been mostly confined to the smaller tools, although an occasional sale of one of those of the larger size is reported. Nothing of particular interest has developed in the second-hand boiler and engine trade, there having been some scattered sales of equipment of the small and medium powers, although gas and gasoline engines have cut into this line to a considerable extent. Several good propositions are pending in new equipment, both in central power plant and medium sized power installations, but these develop into orders with their usual slowness.

Both gray iron and steel casting plants continue on about an even basis. The tonnage of castings produced on the whole is a shade larger, but there has not been enough new business to show any material increase in production. Orders are probably not as good as they were some weeks ago, but both iron and steel foundries have a better volume of business on their order books.

England, Watson & Co., leather merchants, are having plans and specifications drawn for a five-story brick fireproof warehouse building, 117 ft. 10½ in. by 163 ft., to be erected on the site of the old Perot Malt House, recently purchased by them on Vine street, below Third.

A new trolley line, connecting Johnstown and Gallitzin, Pa., in Cambria County, is proposed. The distance is about 20 miles, and it is understood that Pierce & Barnes, Boston, Mass., will make the surveys and prepare the necessary plans and specifications.

The Borough Council of Haddonfield, N. J., opened bids last week for the building of the proposed water works and extension of the present system. Some 50 proposals were received. The Haddonfield Water Company, we understand, objects to the proposed extension. A further hearing in the matter is to be held, pending which no action will be taken regarding the awarding of the contract.

The Board of Directors of the Home for Hebrew Orphans will invite competitive plans from architects and engineers for a new home to be built at Fisher's lane and Spencer street on a four-acre tract of land, the erection of which is to cost about $70,000.

The American Manganese Bronze Company, U. T. Hungerford, president, having its manufacturing plant in this city, and its main office at 99 John street, New York, has taken over the entire business of the Caskey Valve Company, of this city, manufacturer of hydraulic, steam and air valves. R. M. Bailey & Co., 422 Arcade Building, will continue to represent the company in this territory.

Government Purchases.

WASHINGTON, D. C., December 15, 1908.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until December 29 for a generator set and until January 5 for three engine lathes and one rotary splitting shear for the Eastern navy yards.

The Depot Quartermaster, New York, will receive bids until January 15 for six piston pumps, five bilge pumps and seven steam pumps.

The Constructing Quartermaster, Fort Monroe, Va., will receive bids until January 4 for two 264-hp. and one 100-hp. boilers, two 250-hp. compound engines, one 250-hp. and one 120-hp. engines, two 150-kw. and one 75-kw. generators, surface condenser, two boiler feed pumps, one feed water heater and other supplies.

The following bids were opened December 4, Circular No. 475, for three rapid unloading cranes for the Isthmian Canal Commission:

Item 1, three cranes complete, Bergen Point Iron Works, New York, $52,310; Modern Steel Construction Company, Waukesha, Wis., $62,114; Morgan Engineering Company, Alliance, Ohio, $83,470; Wellman-Seaver-Morgan Company, Cleveland, Ohio, $86,100; J. M. Dodge Company, Philadelphia, Pa., $57,390; Interstate Engineering Company, Bedford, Ohio, $62,130; Cleveland Crane & Engineering Company, Wickliffe, Ohio, $50,622

The following bids were opened December 7, Circular No. 479, for class 1, for 10 saddle tank locomotives for the Isthmian Canal Commission:

Burnham, Williams & Co., Philadelphia, Pa., $33,900; Davenport Locomotive Works, Davenport, Iowa, $32,500; Lima Locomotive & Machine Company, Lima, Ohio, $38,000 and $36,650; H. K. Porter Company, Pittsburgh, Pa., $32,250; Vulcan Iron Works, Wilkes-Barre, Pa., $33,500; American Locomotive Company, New York, $33,000.

The following bids were opened December 8 for machinery for the navy yards:

Class 1.—One No. 2 gravity molding machine—Bidder 12, A. Buck's Sons Company, Elizabethtown, Pa., $2950.

Class 2.—One high-speed multiple drill—Bidder 90, Henshaw, Bulkley & Co., San Francisco, Cal., $4180 and $4230; 125, Manning, Maxwell & Moore, New York, $4175.

Class 3.—Two steam windlasses—Bidder 13, Alfred Box & Co., Philadelphia, Pa., $950; 86, Hyde Windlass Company, Bath, Maine, $985.

Class 42.—One hydraulic bolt forcer—Bidder 73, R. W. Geldart, New York, $208.50; 90, Henshaw, Bulkley & Co., San Francisco, Cal., $200.

Class 91.—One oil burning brass melting furnace and one pressure blower—Bidder 102, Kenworthy Engineering Company, Waterbury, Conn., $3032.50; 164, W. S. Rothwell & Co., New York, $2325; 220, Kurc's Fuel Oil Equipment Company, Norfolk, Va., $2089 and $4200; 224, Rockwell Furnace Company, New York, $2232.

Class 111.—One 32-in. lathe—Bidder 64, Fairbanks Company, New York, $2650 and $2750; 72, Garvin Machine Company, New York, $2460 and $2470; 125, Manning, Maxwell & Moore, New York, $3125; 141, Niles-Bement-Pond Company, New York, $2599 and $2347; 222, Prentiss Tool & Supply Company, New York, $2999, $3025, $3570 and $3657.

Class 131.—Two Scotch marine boilers—Bidder 43, William Cramp & Sons Ship & Engine Building Company, Philadelphia, Pa., $3092.50; 74, A. D. Granger Company, New York, $3318; 100, Johnson Iron Works, New Orleans, La., $3600; 125, Manning, Maxwell & Moore, New York, $2925; 135, John H. Murphy, New Orleans, La., $3400; 142, New Jersey Foundry & Machine Company, New York, $2943; 144, National Electrical Supply Company, Washington, D. C., $3045; 167, Springfield Boiler & Machine Company, Springfield, Ill., $2838.50; 192, Union Marine Works, Algiers, La., $3950; 199, Vermilye & Power, New York, $3050; 209, E. Sammons Company, New Orleans, La., $3480; 211, Payne & Jonbert, New Orleans, La., $2865; 223, Pusey & Jones Company, Wilmington, Del., $2975.

Class 141.—One automatic beveled gear planer—Bidder 67, Gleason Works, Rochester, N. Y., $2750.

Class 151.—Two vertical surface grinding machines—Bidder 153, Pratt & Whitney Company, Hartford, Conn., $1800.

Class 164.—One locomotive—Bidder 1, American Locomotive Company, New York, $4250; 24, Burnham, Williams & Co., Philadelphia, Pa., $4600; 117, Lima Locomotive & Machine Company, Lima, Ohio, $4206; 158, H. K. Porter Company, Pittsburgh, Pa., $4138; 194, Vulcan Iron Works, Wilkes-Barre, Pa., $4000; 200, Ernst Wiener Company, New York, $4970.

Class 165.—One 15-ton steam road roller—Bidder 1, American Locomotive Company, New York, $2650; 2, Austin Mfg. Company, Chicago, Ill., $3300; 20, Buffalo Steam Roller Company, Buffalo, N. Y., $3500; 97, Iroquois Iron Works, Buffalo, N. Y., $3022.67; 107, Kelly Springfield Road Roller Company, Springfield, Ohio, $2975 and $3475; 113, Charles Longnecker & Co., New York, $3400; 200, Ernst Wiener Company, New York, $3170.

Class 200.—One valve reseater—Bidder 50, Drew Machinery Agency, Manchester, N. H., $175; 55, Excelsior Equipment Company, Pittsburgh, Pa., $175; 73, R. W. Geldart, New York, $175; 103, Knox & Brother, New York, $175; 125, Manning, Maxwell & Moore, New York, $175; 126, Manhattan Supply Company, New York, $175; 132, Montgomery & Co., New York, $175; 152, S. M. Price Machinery Company, Norfolk, Va., $175; 161, J. B. Roach, Brooklyn, N. Y., $175; 199, Vermilye & Power, New York, $175; 208, Central Metal & Supply Company, Baltimore, Md., $175.

Under bids opened November 11 for two steam windlasses for the Isthmian Canal Commission, all bids have been rejected and purchase made in the open market from the Hyde Windlass Company, Bath, Maine, at $648 each.

Under bids opened October 27 for machinery for the navy yards, Henshaw, Bulkley & Co., San Francisco, Cal., have been awarded class 12, two nipple and pipe mill machines, $900.

Under bids opened November 17 for machinery for the navy yards, the Frevert Machinery Company, New York, has been awarded class 132, two polishing machines and one exhaust fan, $460.

The following awards have been made for machinery for the navy yards, bids for which were opened December 1:

Power Specialty Company, New York, class 21, two superheaters, $2408.

Oliver Machinery Company, New York, class 51, one band sawing machine, $338.

American Wood Working Machinery Company, Rochester, N. Y., class 52, one patternmakers' lathe, $255; class 53, one swing cut-off sawing machine, $80.

Fox Machine Company, Grand Rapids, Mich., class 54, one patternmakers' extension bed gap lathe, $868.

Trade Publications.

Tool, Razor, Cutlery and Machinery Steels, &c.—Carpenter Steel Company, Reading, Pa. Catalogue, 4½ x 6½ in.; 137 pages, and pamphlet. The catalogue contains an interesting preface addressed to practical users of high grade steels which explains in detail the process of manufacturing and contains information on the method of making several of the best known lines of the company's output. Directions for using a number of special steels are given, and the heat colors of steel are shown in tints as they appear in moderate diffused daylight. Many useful tables are included, together with tabulated price-lists of the company's lines. The book should be useful to any users of high grade steels. The pamphlet calls attention to the fact that winning automobiles in the Vanderbilt Cup races of recent years have been equipped with forgings made from Carpenter steel.

Industrial Locomotives and Conveying Machinery.—Jeffrey Mfg. Company, Columbus, Ohio. Bulletin No. 13 and booklet No. 29. The first explains the advantages of using storage battery locomotives for haulage and shows a number of standard machines. Several locomotives in use are illustrated and views of the Jeffrey trolley locomotives are also given. Space is devoted to the motors used in the Jeffrey locomotives, which are shown in parts and assembled. Instruction for the care and maintenance of the storage batteries are also given. The booklet is devoted to the company's system for handling freight and packages. Several types of conveyors are shown and particular attention is paid to different methods of handling in manufacturing plants, such as conveyors for handling baskets in canning factories, packages in cereal food plants, bottles in breweries, &c. The company's line includes belt conveyors, continuous conveyors especially adapted for handling barrels, pails, &c. The company also makes coal and ash handling machinery and equipment for handling stone, ores, &c., and special equipment for sawmills and lumber plants.

Electrical Instruments.—Weston Electrical Instrument Company, Newark, N. J. Circular No. 7. A revised list of the company's alternating and direct current voltmeters and ammeters showing several types and including prices.

Power Presses.—Consolidated Press & Tool Company, Hastings, Mich. Catalogue No. 5, 6 x 9¼ in.; 167 pages; bound in cloth. A well indexed catalogue of the company's line of presses, which includes nearly everything in the way of standard presses, from coining presses to the largest heavy duty presses. All of the standard machines are shown, together with a number of special machines, including some crimping, beading and flanging machines, power body forming rolls, screw cap machinery, an automatic wire ring machine, a meat can stuffing machine and other special machinery. A table of the different wire gauge standards is included.

Multiple Glower Lamps.—Nernst Lamp Company, Pittsburgh, Pa. Booklet. Devoted to the Westinghouse Nernst multiple glower lamps. These lamps can be obtained in units of all sizes and suitable for any lighting purpose. A diagram showing the distribution curves of lights of different candle powers is shown and prices of different sized lighting systems are given.

Valves.—Mason Regulator Company, Boston, Mass. Circular. Shows several types of Mason controlling apparatus, including reducing valves in several types, damper regulators, pressure controlling devices, steam pressure regulators, water reducing valves, &c.

Sherardizing.—United States Sherardizing Company, New Castle, Pa. Booklet. Describes the sherardizing process for rust proofing of iron and steel galvanizing. This was described in *The Iron Age* October 20, 1904. It is claimed that this process covers the articles with a smooth coating of zinc, which follows the contour so closely that the threads of the finest screws are not filled up. It is claimed to be economical and is specially adapted for the treatment of small articles where delicate work is required.

Gas and Gasoline Engines.—Cooper Machine Company, Saltburg, Pa. Folder. Describes briefly the mechanical features of the company's standard gas and gasoline engines, which are made in both single-cylinder and two-cylinder types for small power requirements.

Boiler Compounds.—The Bird Archer Company, 90 West street, New York. A 6 x 9 in. 47-page publication called "Boiler Troubles and Their Prevention." Besides describing the company's line of boiler compounds, the action of feed water impurities within the boiler is described and the results of boiler explosions are illustrated by views of wrecks. Instances of large losses caused by fire damage resulting from boiler explosions are cited and the methods of using boiler compounds are fully explained.

Multiple Drills.—Pratt & Whitney Company, Hartford, Conn. Catalogue, 9 x 12 in., 28 pages. A number of standard types of drilling machines are shown, including adjustable multiple spindle drills with both motor and belt drive. Of particular interest is a machine, new in design, which is made to order only and is suitable for driving high speed steel drills ½ to 1 in. in diameter. The head of this machine may be made with 12 or 16 spindles. The head slides on the column and has quick motion by either hand or power, either down to reach the work or upward for quick return after the drill operation is completed. Four feeds through quick change gears are available. These feeds range from 0.004 to 0.012 in. revolution of the drill. Some heavy drilling equipment is shown and considerable space is given to the company's line of sensitive drills, several of which are illustrated.

Hydraulic Rams.—Columbia Steel Company, Inc., Portland, Ore. Booklet R 5. The Columbia hydraulic ram is described in detail in a manner to illustrate its principles to agriculturists who are not skilled in mechanics. A diagram of the machine showing its operation is given, accompanied by full directions for setting it up and illustrations of installations of the ram for agricultural irrigating. It is stated that the rams have been installed in competition with water wheels and centrifugal pumps, with results advantageous to the use of the ram. The ram was described in *The Iron Age* November 5, 1908.

Gear Cup and Ball Bearing Lubricants.—International Acheson Graphite Company, Niagara Falls, N. Y. Folder. Pertains to the use of the company's combination lubricants, in which graphite is blended with a high grade grease. The lubricants are put up in cans ranging in sizes from 1 to 50 lb.

Chain Gearing.—Locke Steel Belt Company, Bridgeport, Conn. Pamphlet entitled "Extract from a Treatise on Chain Gearing." This is one of a series of subjects treated in the company's literature—namely, the error in design of sprocket wheels which constitute the cause of a large percentage of chain troubles.

HARDWARE

THE postmasters of various cities and towns are interesting themselves in ascertaining the value of the back stamp on letters, which is the postmark of receipt, and in the meetings of their associations the question has been freely discussed. The Post Office Department is trying the experiment of doing away with the back stamp in the post offices of several of the large cities in order to test whether its abolition or retention may prove to be the better for the service. The advocates of the change believe that the time gained in the delivery of mail and the expense saved through the lessening of the number of clerks required are considerations that more than counterbalance the advantages of the check on the system which the back stamp affords. But postmasters are far from being a unit in the opinion that such is the case, and are endeavoring to get the sentiment of the public, especially the business public.

As the system now stands, excepting in the few places where the test of omission is being made, a letter when delivered bears the date, and the larger places the hour, of mailing, and also the day and hour of receipt at the post office of its destination. There is no contention that the postmark is not a necessity. It is an all-important check on the postal system. It is frequently noted by the recipient of the letter, to whom the time of mailing is a convenient and occasionally an essential item of information. In banking and business the postmark may determine most important matters. For instance, the fact that a check is mailed on an agreed date is accepted from the postmark, and may be considered prompt payment though it is not received until a later day. Postmasters who have taken an active interest in the question are coming to the opinion that the back stamp, while not nearly so important as the postmark, has its own field of usefulness along similar lines. To them the prime reason for the belief is that the absence of the back stamp would serve to cover up delinquencies in post offices which are not well managed, in which class not a few important places and very many smaller cities and towns may be included. Railroad post offices may be more intelligently watched for inefficiency. Delay in the mails by the holding of letters in a post office or through error in sorting, by the tossing of letters into the wrong sacks, is an occurrence much more common than may be generally realized. Delay in transportation is frequent, of course. The belief is expressed that the abolishment would be letting down the bars to still more radical changes in the postal system, the ultimate end of which would be doing away with the postmark.

In business there are occasions when the back stamp is a convenience in establishing the history of the transmission of a letter. The existence of the postmark proving the date of mailing sometimes needs to be confirmed by the presence of the back stamp in order to establish the time of receipt. Traveling men realize this from their personal experiences; letters sent to them from the home office have been delayed in the mails; the back stamp proves the fact. Correspondence between business houses, or between them and customers, may be relieved of some embarrassment in like manner. Without the back stamp suspicions might arise; unscrupulous persons might plead delayed mail, when such was not the case. These are some of the statements of the opponents of the abolition of this feature of the postal system. Against them are the facts, as stated, of a slight saving in time of delivery of mail and the lessened cost of the service consequent upon reduced forces of postal clerks.

Condition of Trade.

At this time of the year, when trade is entering on the holiday season and the new year is so soon to open, merchants and manufacturers alike, while giving principal attention to the regular routine of business, find other matters which change the usual course of thought and have place among the special features of the existing situation. So far as a general retrospect is in order, there is not a little satisfaction at the eminently good record made by the year in a business way, especially in view of the uncertainties and perils by which its opening was confronted. In connection with this general review of the 12 months past there are in each establishment preparations going on for ascertaining the results of the year's business and the profit or loss which is to be shown at the closing of the books. While in many cases it must be presumed that business has been less amply rewarded in dollars and cents than in previous more prosperous times, there is little doubt that houses which have little to show in the way of profit have still reason to be gratified that things are not worse, and that taken all in all the year ends with a record which is very creditable and reassuring. To this way of looking at the situation the holiday spirit with the approaching Christmas festivities contributes not a little, bringing as it does a kindly disposition and a hopeful spirit into the midst of perplexities and work inseparably connected with business activities. Indications of the near approach of the holidays are found in the belated rush orders for goods needed at once, in the calling in of traveling salesmen, and in the pressure of a less aggressive out-reaching for business, as energies are more engrossed in closing up the affairs of the year than in active efforts outside the store or factory. A good deal is being done in a quiet way in the revision of prices, and some advances are being put into effect which find, however, an offset in declines in other lines. The market with the uncertainties in regard to raw material is thus in an interesting condition, and careful merchants find an opportunity for the exercise of good judgment, as well as skill in the placing of their orders. While it is questionable what will be the effect of the proposed tariff revision, or of the discussion of the question, merchants generally will doubtless recognize the desirability of keeping up their stocks and purchasing needed goods on a conservative basis, realizing that more is to be lost by permitting their business to suffer from an inadequate supply of goods than from any loss resulting from a possible decline in the value of stocks on hand. This is especially the case as the prospects for business throughout the country during the coming year are promising. All this should contribute to the confidence and cheer of the holiday season, in the enjoyment of which, and in the pleasure both of giving and receiving, we sincerely trust our readers may have ample share.

Chicago.

With cheering prospects ahead and the existence of fairly satisfactory conditions at the windup of a year fraught to an unusual degree with care and anxiety concerning commercial and financial affairs, there is more reason for a congratulatory than a complaining spirit in the Hardware trade at this particular season. Both in a review of the situation and future forecast, are good grounds found for the very general feeling of optimism that now prevails. If results have been disappointing and profits have fallen short of expectations, there is the reflection that many of the perils threatened have been averted and the way ahead, as far as can be seen, is in a large measure free from the obstacles recently encountered. When compared with the same month a year ago, a comforting contrast is observed, not only in the volume of business developing, but also in the degree of confidence manifested respecting its onward course. Then buying for future requirements was almost wholly suspended and orders included only what was imperatively required to meet the needs of current demand. While the caution inspired by that period with its attendant financial stringency still lingers, more attention is being given to the provision of goods for spring trade with the result that purchases of this character are being made upon a more liberal scale than was the case last year. Unless obstructed by severely cold weather, building operations, which locally are going forward without halt, are likely to continue active throughout the winter. Quite a good many new buildings are even now being started, and work on those already under way is in full swing. Colder weather has had the effect of stimulating business in furnace and shop departments, with a consequent demand for Galvanized Sheets. In no section of the market is their seen stronger or more encouraging movement than in Wire products. Not only is the demand for Wire Nails upon a squarely normal basis, but the call for Barb Wire and Fencing is quite satisfactory, considering the fact that this is a between season period for such goods. Manufacturers of woven and other forms of Wire Fencing are looking forward to and preparing for an active spring demand for their product. The price changes reported are quite unimportant, and what few are announced are more in the nature of readjustment to equalize schedules than radical revisions in either direction.

Cleveland.

W. BINGHAM COMPANY.—At this time of the year we anticipate a letting up or a little more quietness in the general Hardware trade, for retail merchants are inclined to devote their attention mostly to the sale of holiday goods. Then when Christmas is over they begin to think about taking their annual inventory. However, in the closing days of the year we are confronted with a good deal of activity in all branches of the Hardware line, and Cleveland Hardware jobbers have been receiving more orders since the election than for some months previously.

Manufacturers are specifying quite liberally for their immediate and future wants, and it is reported that a number of large railroads in Canada and United States are placing orders for locomotives, box cars, dump cars, rails and other necessary material. This all goes to show that the railroads, the great arteries of the country, are reviving from their past lethargy. Smoke from the chimneys of many manufacturing plants is belching forth in large volume, showing that the manufacturing business is being resumed on a large scale, and the hum of the machinery in our factories is heard all over our land. We are getting into line with safe, sane and prosperous times.

Our American people are great consumers of all kinds of commodities, and the requirements of our people in all classes of goods are very large. As we read the statistics of the Maine crop of potatoes, which is marketed largely in the city of Boston, we can realize at once what an immense consumption of this one vegetable is going on, for it is reported the commission merchants of the city of Boston alone have been receiving as many as 500 carloads a week, averaging 600 bushels to the car, thus amounting to about 300,000 bushels of potatoes. It is estimated that 12,500,000 bushels of the Maine potato crop will be handled through Boston merchants, and as the total crop of the State is a big one and the farmers are paid about 40 cents a bushel for the potatoes, there will be poured into the lap of the Maine farmers about $5,000,000 for the potato crop alone.

In this section the revival of general Hardware business and trade conditions is reflected by the fact that dealers generally are sorting up their stocks, and the majority of them seem to have plenty of money to discount their bills promptly. It is quite evident there is plenty of money in the country for legitimate and investing trade, for it is stated that in some of our large business centers $1.35 goes into savings banks for every $1 that is taken out. This shows a balance on the right side for the people.

We feel very much encouraged at the outlook, and we extend to our friends, one and all, the wish that they may enjoy a very Merry Christmas.

Boston.

BIGELOW & DOWSE COMPANY.—Seasnable weather with ice and snow stimulates general business, which is making a good showing the present month. There is a marked change for the better over the volume of business at this season last year. Customers buy more freely of seasonable goods and show more confidence in the future. There is every indication of a satisfactory holiday sale. Labor is generally well employed and the people have money to spend. New England has been favored in comparison with other parts of the country, for they have felt the panic less than other sections. At the close of the year the sales should be almost normal.

Prices are changing but little and are inclined to advance rather than to decline. Undoubtedly if it were not for the tariff agitation many goods would be higher.

There seems to be every indication of a satisfactory business for the winter and the spring months. Stocks are light and neither the retailer or the jobber have heavy stocks on hand. At present manufacturers report a marked increase in the size and frequency of orders.

It seems to be good policy to carry well assorted stocks and to be a safe time to buy. Everything points to gradually increasing prosperity. The State Employment Bureau reports one-fourth as many names registered for situations as in December, 1907.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Until recently we have not been favored with such weather as would increase sales on regular winter goods. General trade, however, has increased since our last letter to *The Iron Age*, and it is the belief of many manufacturers that trade will continue to enlarge. In a recent conversation with a manufacturer of goods sold by the Hardware trade he stated that orders received by him last month were greater than for the same month of 1907 or 1906.

Investigation of tariff changes has been in the hands of a committee for some months and will now go before the House and Senate, who, we also understand, will discuss it with various manufacturers. In connection with this examination a matter that will naturally have a bearing is that in the fiscal year ending June, 1907, the Treasury surplus was over $85,000,000, while in June, 1908, there was a deficit of nearly $60,000,000.

The writer was in a foreign country some years ago when the question of an advance in the rate of Tariff was before Congress. At that time all that we used of one certain kind of goods was imported from the section referred to. There was naturally a feeling there against the importation rate. Now since that rate was changed these goods are all manufactured in this country and sold at a little less than when they were imported. Of course, a number of other goods were largely imported then which are now manufactured in this country, but we believe that many changes could be made on certain kinds of imported goods without injuring the manufacturers of this country.

The financial condition of the country has certainly largely improved and trade should largely increase early in the year 1909.

Christmas is now near and it seems to the writer there was never more interest taken in its coming than this year. On Saturday last Market street was crowded with persons buying goods for Christmas, and the department stores look for a large increase between now and December 24. The general retail trade ought to very much improve in the next 10 days on goods sold for the Christmas holidays.

New Orleans.

WOODWARD, WIGHT & CO.—The market in our lines continues steady, and while no appreciable increase in orders can be recorded there is a very much better feeling than for some time back. The sugar industry throughout Louisiana, while meeting with a slight setback due to the unseasonable cold weather a month ago, is turning out an average crop, and the market prices are considerably better than those obtainable last season. Therefore, the sugar industry, as a rule, has had a satisfactory return in quantity and price for the crops. The rice crop is large. The early sales were made at very satisfactory prices, but considerable is now in storage, awaiting a better market, and return to the planters in most cases have been satisfactory. The cotton crop in Louisiana and western Mississippi has been materially curtailed, due to the activity of the boll weevil, and some sections have fared badly. The price is low and the market has been very inactive for several weeks back. Texas has produced a large crop, and the returns to the planters there are probably better than anywhere else in the South. The textile industry in general is running at a low ebb, and no improvement of any consequence can come to cotton people until business picks up to a considerable extent. Many of the lumber mills are running on short time, but as the market is not overloaded the prices are somewhat better than a few months ago and conditions as a rule in this industry are considerably improved, although it will take a great deal of activity in general building operations and railroad work to put the industry back to normal. Hardware and mill supply lines are using a fair amount of supplies, but as every one is feeling better and the prospects after the first of the year are for a starting up of several important pieces of work, we hope to see a considerable revival the early part of 1909.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Our business up to date for December shows of course a heavy increase over the panic times of last year. It is particularly interesting to note, however, that for the same part of the month it is better than October or November of this year. This is unusual as the natural order of events is for business to taper off in December.

The whole course of our business indicates that buying on the part of retail dealers has been late in the season. There evidently has been an insistent demand upon retail stocks. This is indicated by the fact that our mail order sales in November were the greatest of any month in the history of this business, and mail orders direct from our customers in December continue unusually heavy. One feature of our sales has been the exceedingly heavy demand for Loaded Shells. There must have been a great deal of hunting this year.

The sale of new stocks is always a barometer of the drift of the times. Recently we have sold in the house and received through our salesmen more new stock orders than in a like period since the times of very active business in 1907. Most of these new stocks are being shipped to the Southwest.

This is our closing letter of the old year. Nineteen hundred and eight will go down in history as a hard and trying year. We have enjoyed the experience of a panic and a Presidential election in the same year. This time a year ago the prospect was full of uncertainty, gloom and forebodings.

We now see no reason why here in the Middle West there should not be a very satisfactory business the coming year. Crops have not only been larger than last year, but prices for almost all kinds of farm products are exceedigly high. Think of one of the largest crops of corn in the history of the country and this crop bringing 85 cents a bushel. We are informed this increase in the price of corn is brought about by the growing popularity of corn in foreign countries, also by the increased use of corn in many products. As far as we can see, there is no reason why there should not be an excellent business in all agricultural sections the coming spring.

Naturally the recovery in those towns depending upon the railroads and upon manufacturing may be slower, but with increasing business for the railroads and with a growing demand from the agricultural districts, it will not be long before manufacturing towns will feel the quickening impulse of better times. Therefore the facts that are brought to our attention in the daily conduct of our business lead us to look forward cheerfully to a good and satisfactory business the coming year.

We close wishing *The Iron Age* and our Hardware friends, retail merchants, manufacturers and jobbers a Merry Christmas and a Happy and Prosperous New Year.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Business during the month of November was rather disappointing, and nearly all of our salesmen reported it was somewhat difficult to get orders of any size, but we are glad to see that December has started off much better. The first week in December has been very heavy. Nearly all traveling men are doing well, and mail orders are showing a large increase; a great many orders also are now coming in for spring goods for future shipment. December is usually not a very heavy month with us, but we believe it will be particularly good this year.

We look for a heavy spring trade. The people in the South are in good condition and the merchants have light stocks, and all indications point to a large volume of business after January 1. Collections are excellent.

We wish *The Iron Age* and its many readers the compliments of the season.

Baltimore.

CARLIN & FULTON.—From now until the end of the month, which is also the end of the year, business is apt to be confined to the requirements of the holiday season, as most houses take their annual inventory about January 1.

A year ago it was supposed from the outlook of trade there would be a great slump in values. While there have been some reductions, they have not been of an important kind, and the depreciation, as will be shown by stock inventories, will be comparatively small. The outlook is undoubtedly encouraging, as it is stated that specifications for more than 400,000 tons of steel rails have been prepared by the railroads, and the deliveries will begin early in the new year. The railroads are also ordering a great number of new cars, which will also help the situation. Bank clearings, which are an index of the activity of business, show a great improvement, and the new year will begin under very different auspices as compared with the year now ending.

Congress hardly intends to do anything of a radical nature to interfere with business, and even a revised tariff could not effect trade for nearly a year to come as far as present costs of manufacture are concerned. The consumer throughout the country should realize the fact that while the manufacturers for several years, with an immense demand for their products in excess of their producing capacity, had the opportunity to inflate values far beyond what was prudent or reasonable, they seldom took advantage of the situation, and for that reason there has been no radical reduction in prices as the result of the business depression of last year.

Portland, Oregon.

FAILING-MCCALMAN COMPANY.—Business continues to be very good for this season of the year, both in our line and in all others in this territory. We on the North Pacific Coast have certainly no cause for complaint of the business we have had during the year, for it has in every case very nearly equalled that of 1907, but as we look forward into the year 1909 we believe that even the high-water mark of 1907 will seem as much like dull times a year from now as 1906 did in December, 1907. Every condition, as far as can be told at this time of the year, is favorable for a large business for the Hardware

dealers in this territory. There only remains to be said that collections are rather better than usual at this time of the year, showing that there is plenty of money in the country.

We wish you and all your readers a Merry Christmas and a Happy New Year.

NOTES ON PRICES.

Wire Nails.—For the next two or three weeks demand will probably be light, owing to inventory taking and closing up business for the year. It is confidently expected by manufacturers that early in the new year a revival of buying will be in evidence, and that a good volume of business will result. With regular prices steadily maintained, quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers	$1.95
Carload lots to retail merchants	2.00
Less than carloads to jobbers	2.00
Less than carloads to retail merchants	2.10

New York.—The local market is devoid of new features, as a moderate demand made up of small orders constitutes the movement of Wire Nails. Nails are held on the basis of $2.30 per keg in small lots at store, but some sellers are occasionally inclined to shade this figure.

Chicago.—The volume of new business is much heavier than at this time last year, but is beginning to slack up somewhat, as the holiday season approaches. In another week salesmen will be leaving their respective fields and active efforts to secure business will be suspended until after the beginning of the new year. Under these circumstances, there will naturally be a falling off in trade, but the utmost confidence in its revival after the vacation period is over, is expressed by both manufacturers and jobbers. Prices, we are advised, are unqualifiedly firm and unchanged. Quotations are as follows: $2.13 in car lots to jobbers, and $2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—New orders for Wire Nails this month have been very light, and specifications against contracts have shown a large falling off as compared with the first half of November. This is due to the fact that we have entered the inventory period and the merchants and consumers are more concerned in taking inventory and closing up the year's business than in placing new orders. The American Steel & Wire Company has been operating the Rod and Wire mills at its Donora, Pa., works practically full for some time, and on January 2 will start up one of the two idle blast furnaces and six of the 12 open hearth furnaces in the steel plant. A material betterment in demand for Wire Nails is looked for after the first of the year, and we are advised that prices are being well maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.95
Carload lots to retail merchants	2.00

Galvanized Nails are quoted at $1 over the price of the regular Nails.

Cut Nails.—Some of the Cut Nail mills have refused to enter 60-day contracts for Nails, but are willing to book orders covering the month of January. They complain that the high price of steel leaves insufficient profit on the finished product at the present price of Nails. Other mills find it expedient to occasionally make concessions in price on desirable orders. Demand is naturally light at this season. The price for Steel Cut Nails is $1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and $1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

New York.—A continuance of a moderate demand characterizes the local market. Steel Cut Nails are held on the basis of $2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

Chicago.—The uninterrupted activity in building which, up to the present time, has not been seriously retarded by cold weather, has helped to sustain the demand for Cut Nails. While there is not much new buying, jobbers are specifying pretty freely against contracts, and shipping in small lots to meet current needs of consumption. The mills are not disposed to make concessions from present prices except for especially desirable specifications for early delivery, and then not to exceed 5 cents a keg from the accepted scale. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, $2.08; Steel Cut Nails, $1.98.

Pittsburgh.—Jobbers and retail merchants alike are holding down stocks as much as possible this month to take inventory and close up the business of the year, and this has caused a distinct falling off in new orders for Cut Nails and in specifications against contracts. A larger demand for Cut Nails is looked for very early in the new year. Prices are fairly firm, but concessions are occasionally made on desirable orders. The market is $1.80, base, per keg, f.o.b. Pittsburgh, but $1.75 is made on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

Barb Wire.—The orders being placed with mills are comparatively few, but are satisfactory, considering the advanced stage of the season. The continued mild weather has considerably augmented the consumption of Barb Wire this fall, and a revival of business is anticipated when spring buying commences. According to reports regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Chicago.—The recent cold weather which for several days has been prevalent throughout the West has not as yet materially affected the demand for Barb Wire, though a lighter movement is looked for soon. A fair amount of new orders are being placed considering the season, but these, it is believed, will be largely augmented when buying in Southern territory for the early spring trade begins. The same degree of firmness observed in other Wire products rules with respect to Barb Wire. Quotations are as follows: Jobbers, Chicago, car lots, Painted, $2.28; Galvanized, $2.58; to retailers, car lots, Painted, $2.33; Galvanized, $2.63; retailers, less than car lots, Painted, $2.45; Galvanized, $2.75; Staples, bright, in car lots, $2.25; Galvanized, $2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Very few new orders are being placed for Barb Wire, but a much heavier demand is expected early in the new year, when the large trade and consumers begin to place orders for the spring trade. Stocks held by the mills and jobbers are reported to be unusually light, and we are advised that prices are well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.10	$2.40
Retailers, carload lots	2.15	2.45
Retailers, less than carload lots	2.25	2.55

Plain Wire.—A moderate amount of new business is being received by the mills, and specifications against contract orders show a falling off, owing to the lateness of the season. Regular prices are being maintained, according to advices. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.80 for Plain and $2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Chicago.—A moderate volume of new business is being placed by manufacturers of Fence and other products who are specifying freely against contracts and mill shipments are fairly heavy. The outlook for a large Fence trade through the coming season is particularly good. Prices are reported to be strictly maintained. We

quote as follows: Car lots to jobbers, $1.98, f.o.b. Chicago, and to retailers, $2.05.

Pittsburgh.—A fair run of small orders for current needs is being placed by the Fence manufacturers and indications are that demand will show betterment very early in the new year. Specifications against contracts so far this month show a falling off as compared with November, but this was expected, as this is the inventory period when very little new buying is done. It is stated that regular prices are being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, *on a basis of $1.80 for Plain and $2.10 for Galvanized*, f.o.b. Pittsburgh, 60 days, or 2 per cent discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Auger Bits.—The line of Auger Bits which has for many months been weak and irregular, as a result of light demand and active competition, stiffened appreciably last week. Extreme concessions have very generally been withdrawn, and the market has been established on a level from 5 to 10 per cent. higher. Quotations to the general trade may be represented by a discount of from 80 to 80 and 10 per cent.

Flour Sifters.—The prices on Flour Sifters generally are without material change, but slightly lower figures are being made on those without manufacturers' name.

Sandpaper.—Quotations on Sandpaper continue to exhibit the regularity which has characterized the market throughout the year. The firmness of this line during the period of general depression has been noteworthy, and it is reported by manufacturers that the volume of business has held up remarkably well. A discount of 50 and 10 per cent. may be named to represent the market to the retail trade on Flint and Emery Paper and Cloth and 25 per cent on Garnet. These quotations are made on standard brands. Additional concessions of 10 per cent. or so may be obtained on goods whose reputation is not so firmly established.

Hatchets.—The market on Hatchets is in such a condition that developments are awaited with interest. Prices have been pretty well maintained during the past year in spite of the unfavorable business conditions, but the present tendency seems to be toward a lower level, especially as there is no agreement between the manufacturers and thus the market is practically an open one. Existing prices are, however, referred to by the manufacturers as low, but if animated competition should develop something of a decline would be a natural result.

Handled Hammers.—Manufacturers of Handled Hammers have recently been in conference in regard to the market in which the effects of competition, some of which is new, have been manifested in slightly irregular prices. As a result of this interchange of views there has been some readjustment of prices, and a reduction of about 5 per cent. on Machinists' Hammers. The situation in this line of goods is regarded as pretty satisfactory, with prospect of good business in the near future.

Rubber Belting, Hose, Etc.—Within the past few weeks a rapid and extensive advance has taken place in the prices of crude Rubber. As a result demand for Mechanical Rubber Goods has increased, the trade showing a disposition to place their contracts early and for liberal quantities. Under these conditions prices on Belting are naturally stiff, although few advances have yet been announced. It is generally believed, however, that medium and better grades of Belt will have to be advanced somewhat by the manufacturers and that good quality Hose will also be higher next season than it was last.

Registers.—Prices on Registers continue steady and manufacturers report a moderate but nevertheless encouraging improvement in business resulting largely from increased building activity. The established discount to the general trade is 70 per cent.

Chisels and Drawing Knives.—After a long period of extremely low prices, signs of improvement have at last appeared in the Chisel market. The change will be welcomed as promising increased activity in carpenters' Tools, demand for which has been at a low ebb. Leading manufacturers have withdrawn concessions amounting to 10 per cent. or more, so that Chisels may now be quoted to the retail trade at a discount of from 80 and 10 to 80, 10 and 10 per cent.

Squares.—Steel Squares may be said to show some improvement, at least as regards the tone of the market. Prices continue low, but no new concessions have lately been reported. The line may be quoted in a general way *at a discount of from 80 to 80 and 10 per cent.*

Vises.—The market on Solid Box Vises is low, being represented by a discount of from 60 to 60 and 10 per cent.

Blasting Supplies.—The E. I. Du Pont de Nemours Powder Company is naming the following prices on Blasting Supplies:

Safety Fuse is quoted per 1000 ft. on the following list, which is subject to a trade discount of 10 and 2½ per cent., f.o.b. magazine: Cotton, $3.20; Single Tape, $3.65; Double Tape, $4.40.

Exploders are sold on the standard list from which a discount of 10 per cent. is allowed. On lots of 1000 and upward the discount is 15 per cent. Lots of 5000 and upward are delivered and are subject to a discount of 25 per cent.

Blasting Caps are sold on the following list, from which there is a trade discount of 25 cents per 1000 on case lots and 50 cents per 1000 on smaller quantities:

BLASTING CAPS.

In the United States east of Montana, Wyoming, Colorado and New Mexico:

	Triple. (XXX) Per M.	Quadruple. (XXXX) Per M.	Quintuple. (XXXXX) Per M.	Sextuple. (XXXXXX) Per M.	No. 20. Per M.	No. 30. Per M.
Five-case lots, delivered*	$5.25	$5.75	$6.25	$7.25	$9.25	$12.50
Case lots (25,000), del	5.50	6.00	6.50	7.50	9.50	12.75
1000 or over, f.o.b. distributing points	6.00	6.50	7.00	8.00	10.00	13.25
Less than 1000, f.o.b. distributing points	6.25	6.75	7.25	8.25	10.25	13.50

In the United States west of the eastern line of Montana, Wyoming, Colorado and New Mexico: Same prices as above, f.o.b. Denver, Colo., and Butte, Mont.

* Delivered at railroad station nearest point of delivery.

Or the following prices f.o.b. Stege, Cal.:

	Triple. (XXX) Per M.	Quadruple. (XXXX) Per M.	Quintuple. (XXXXX) Per M.	Lion. Per M.
Lots of 125,000	$5.25	$5.85	$6.50	$7.50
Lots of 25,000	5.50	6.10	6.75	7.75
Lots of 10,000	5.75	6.35	7.00	8.00
Lots of 5,000	6.00	6.60	7.25	8.25
Lots of 1,000	6.25	6.85	7.50	8.50
Less than 1,000	6.50	7.50	8.00	9.00

Batteries are quoted at the following prices for U. S. Standard and Reliable brands: No. 0, $10; No. 2, $15; No. 3, $25; No. 4, $50; No. 5, $75. On Nos. 2, 3, 4 and 5 these prices are subject to a trade discount of 20 per cent.

Powder.—The following price-list of the E. I. Du Pont de Nemours Powder Company gives the ruling quotations on Black Sporting Powder in the various territorial groups into which the country is divided. Terms of delivery are also shown, together with quantity discounts beyond which there is a general trade discount of 10 per cent. Distributing points indicate the location of the various magazines maintained by the company.

Black Sporting Powder.

GROUP I.

Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.

Kegs (25 lb.)	$5.50
Half kegs (12½ lb.)	3.00
Quarter kegs (6¼ lb.)	1.65
Canisters, pounds (25 to case)	.25
Canisters, ½-lb. (50 to case)	.15
Canisters, ¼-lb. (100 to case)	.12

Lots of 100 lb. or over, delivered at nearest railroad station.
Less than 100-lb. lots, f.o.b. distributing points.
A discount of 10 per cent. allowed on lots of 100 lb. or more.
Distributing points for Group I: Newhall, Maine; Boston (Quincy), Mass.; New York, N. Y., and Valley Falls, N. Y.

GROUP II.

Delaware, Maryland, New York, New Jersey, Ohio, Pennsylvania, Virginia and West Virginia.

Kegs (25 lb.)	$5.00
Half kegs (12½ lb.)	2.75
Quarter kegs (6¼ lb.)	1.50
Canisters, pounds (25 to case)	.25
Canisters, ½-lb. (50 to case)	.15
Canisters, ¼-lb. (100 to case)	.12

Lots of 250 lb. or over delivered at nearest railroad station.

Less quantities, f.o.b. distributing points.

A discount of 10 per cent. allowed on lots of 250 lb. or more.

Distributing points for Group II: Baltimore, Md.; Buffalo, N. Y.; Catasauqua, Pa.; Cincinnati (Cumminsville), Ohio; Huntington, W. Va.; Newburg, N. Y.; Communipaw, N. J.; Philadelphia (Norristown), Pa.; Pittsburgh (Rand), Pa.; Pottsville, Pa.; Richmond, Va.; Rosendale, N. Y.; Schaghticoke, N. Y.; Tamaqua, Pa.; Wayne, N. J., and Wilmington, Del.

GROUP III.

Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Kansas, Louisiana, Minnesota, Missouri, Mississippi, Michigan, Nebraska, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Texas and Wisconsin.

Kegs (25 lb.),	$5.25
Half Kegs (12½ lb.)	2.90
Quarter kegs (6¼ lb.)	1.60
Canisters, pounds (25 to case)	.25
Canisters, ½-lb. (50 to case)	.15
Canisters, ¼-lb. (100 to case)	.12

Lots of 250 lb. or over delivered at nearest railroad station.

Less quantities, f.o.b. distributing points.

A discount of 10 per cent. allowed on lots of 250 lb. or more.

Distributing points for Group III: Atlanta, Ga.; Birmingham, Ala.; Chattanooga, Tenn.; Chicago, Ill. (Pleasant Prairie, Wis.); Des Moines, Iowa; Detroit (Monroe), Mich.; Duluth, Minn.; Indianapolis, Ind.; Kansas City (Leeds), Mo.; Knoxville, Tenn.; Louisville, Ky.; Minneapolis, Minn.; Milwaukee, Wis.; Minnesota Transfer, Minn.; Memphis, Tenn.; New Orleans, La.; Nashville, Tenn.; Omaha, Neb.; St. Louis (Eureka), Mo.; St. Paul, Minn.

GROUP IV.

Montana, Wyoming, Colorado and New Mexico.

Kegs (25 lb.)	$5.50
Half kegs (12½ lb.)	3.00
Quarter kegs (6¼ lb.)	1.65
Canisters, pounds (25 to case)	.25
Canisters, ½-lb. (50 to case)	.15
Canisters, ¼-lb. (100 to case)	.12

Prices are f.o.b. Denver, Colo., for any quantity.

A discount of 10 per cent. allowed on lots of 250 lb. or more.

Orders for shipment to points in Group IV will be accepted only for delivery f.o.b. Denver, Colo.; Omaha, Neb.; Kansas City, Mo., or Eastern distributing points at ruling prices for such distributing points. No freight allowed.

The same discount, for quantity, will apply as is allowed at the distributing point from which shipment is made.

GROUP V.

Arizona, California, Idaho, Nevada, Oregon, Utah and Washington.

Kegs (25 lb.),	$6.25
Half kegs (12½ lb.)	3.40
Quarter kegs (6¼ lb.)	1.80
Canisters, pounds (25 to case)	.35
Canisters, ½-lb. (50 to case)	.20
Canisters ¼-lb. (100 to case)	.15

Prices f.o.b. distributing points in any quantity.

A discount of 5 per cent. allowed dealers in any quantity f.o.b. distributing points.

Distributing points for Group V: San Francisco or Santa Cruz, Cal.; Portland, Ore., and Seattle or Tacoma, Wash.

Poultry Netting.—A conference of interests connected with the manufacture of Poultry Netting was held last Tuesday, after which the makers announced an advance in their quotations of 2½ per cent., to take effect immediately. The features of this market have recently been referred to in our columns. While the established schedule of prices to the jobbing and retail trade have in the main been satisfactorily maintained by the manufacturers, there have been some exceptions and considerable irregularity has been caused by price cutting on the part of jobbers in certain sections. The conference was called to deal with the situation and the advance decided on was the remedy urgently recommended by many representative jobbers. The effects of the action taken will be watched with interest.

Sash Weights.—The market generally is characterized by a firm tone, but there is more or less irregularity in price in the different sections of the country, owing to local conditions, character of competition, &c. Some Western jobbers, for example, are selling at $19. to $19.50, which is not far from the price at which goods may be obtained from manufacturers in that territory. This is a lower figure than prevails in other markets, in some of which prices are firm and slightly higher.

Rivets.—Tinners' and Miscellaneous Rivets are still being quoted at low prices, although extreme concessions have recently been withdrawn by one or two manufacturers. While the market is irregular, as a result of sharp competition, it may be fairly represented in a general way by quotations of from 80 to 80 and 10 per cent. discount.

Pumps.—Prices on competitive lines of Sink, Cistern and Pitcher Spout Pumps hold steady, as they have done for several months. Low prices, however, are occasionally reported as made by some Western manufacturers whose range of activity is limited. The market on standard brands in less than carload lots may be represented by a discount on Pitcher Spout Pumps of from 75 and 10 to 80 per cent., and on Sink and Cistern, 60 per cent.

Snaths.—There are indications of slight irregularity in the price of Scythe Snaths, concessions of 5 per cent. or so on established prices being reported here and there.

Washers.—The price of wrought Washers may be said to have stiffened somewhat, partly through sympathy with advances in Bolts. Pair quotations may now be figured on a basis of $6.50 off list. Heavy cast Washers range from 1½ to 1¾ cents per pound.

Wire Cloth.—At a meeting of leading manufacturers of Screen Wire Cloth held this week, the opinion prevailed that no change in prices should be made at present, and ruling quotations were reaffirmed. It was reported that prices are being satisfactorily maintained both by manufacturers and jobbers.

Window Glass.—The mild weather which has prevailed has made building operations possible in many sections of the country, and has improved the demand for Window Glass, so that the movement from manufacturers' and jobbers' stocks is fairly satisfactory. The plan, favored by a large body of Glass workers, to substitute a flat scale of wages for the sliding scale now in force, is not regarded with favor at all Glass manufacturing centers. The matter was considered last week, but an agreement was not reached at the meeting. The minimum price recommended by the Eastern Window Glass Jobbers' Association on all sizes single and double strength Glass, covering territory east of Chicago, is 90 and 20 per cent. discount from jobbers' list, October 1, 1903, but this price is often shaded 5 or 10 per cent., but this is sometimes for inferior goods or under the pressure of a special desire to effect sales. Some jobbers handling a high quality of hand blown Glass, turned out by manufacturers who do not have to sacrifice their product, are maintaining prices well.

Rope.—Anxiety to sell, on the part of large handlers of Rope, is indicated by the prevalence of unsolicited quotations received from them by the trade, especially for spring delivery, at lower than card prices. A somewhat general price for Pure Manila Rope on contract is on the basis of 8½ cents per pound, but this figure is sometimes shaded, and some sellers guarantee this price against decline up to date of shipment. Such quotations have the effect of holding merchants back from ordering in quantities larger than to supply immediate requirements. Manila Rope in carload lots, for immediate shipment, cash to accompany order, has been offered in some sections of the country, at lower than the foregoing price. The quotations on small quantities of Rope, 7-16 in. in diameter and larger, remain as before. Pure Manila, 8¾ to 9 cents; Pure Sisal, 6¾ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, 6½ to 6¾ cents; No. 2, 6 to 6¼ cents.

Linseed Oil.—Local demand is confined to small lots for immediate requirements. There was a call for deliveries on contract orders for a moderate amount of Oil. Car lots of State and Western Raw are obtainable at 46 cents per gallon for delivery through January, but buyers show no disposition to pay this price. Quotations in 5-barrel lots are unchanged, as follows: State and Western

Raw, 47 cents per gallon; City Raw, 48 cents per gallon. Boiled Oil is 1 cent advance on Raw.

White Lead in Oil.—Owing to the continued decline in Pig Lead, manufacturers announced a reduction in the price of Lead in Oil of ¼ cent per pound on December 10. In this market demand for the finished product has been fairly good for small lots. Revised quotations are as follows for the best brands: Lots of 500 lb. and over, in 100-lb. kegs and upward, 6¾ cents per pound; in lots of less than 500 lb., ½ cent per pound advance.

Spirits Turpentine.—Demand is light at this point, with prices about ½ cent lower than at our last report. This is the season when the Turpentine market is usually quiet. The New York market is represented by the following quotations: Oil Barrels, 42 to 42½ cents; Machine Made Barrels, 42½ to 43 cents per gallon.

Trade Items.

THE third annual convention of the Wisconsin Retail Implement & Vehicle Dealers' Association was held at the Republican House, Milwaukee, December 8, 9 and 10. Plans were laid for an effective presentation to the next Wisconsin Legislature of subjects of particular interest to the members. In strong resolutions the association renewed its former opposition to catalogue and mail order houses and took a positive stand against parcel post. The report of the secretary showed that the association now has 208 members. At the closing session F. R. Sebenthal, Eau Claire, was re-elected president, and D. W. Allaby, Mauston, vice-president. New directors elected were G. F. Borchardt, South Milwaukee, and L. H. Kraus, Port Washington. At a meeting of the new Executive Board C. F. Schraeder, Markesan, was re-elected secretary and treasurer. The next convention will be held at La Crosse. In connection with the convention exhibits were made by various Vehicle and Farm Implement concerns.

KEATING & HUGGINS, Chattanooga, Tenn., is a new firm, just organized, which will represent manufacturers of Hardware and kindred lines in Southern territory, as both of its members have been doing for the past 25 and 16 years, respectively. Mr. Huggins has covered the southern part of the United States for 16 years as the representative of Landers, Frary & Clark, New Britain, Conn., Mr. Keating having represented several manufacturers in the South since 1883. The new firm has concluded negotiations with the American Cutlery Company, Chicago; American Shear & Knife Company, Hotchkissville, Conn.; Schmachtenberg Bros., New York City; Williams Brothers, Glastonbury, Conn.; Colebrookdale Iron Company, Pottstown, Pa.; Payson Mfg. Company, Chicago, and arrangements with several other houses will be concluded in the near future.

A. R. PRITCHARD, Rochester, N. Y., has been made general manager of the reorganized Lisk Mfg. Company, Canandaigua, N. Y. This new interest, however, will in no wise affect his position in the Pritchard-Strong Company, Rochester, N. Y., nor will it have any bearing on the policy of the two concerns, the latter of which markets its product through the wholesale trade and the former through the retail. Mr. Pritchard's long experience in the sheet metal goods business fits him in a special way to be of assistance to the Lisk Company at this time, and his assumption of added responsibility will in no wise lessen his interest in the other enterprises with which he is connected.

T. P. WALLS, C. J. BRAY and H. D. SMYTH have formed a new firm under the style of Walls, Bray & Co. They will handle Machinery, Tools, Mill, Factory and Blacksmiths' Supplies, Iron, Steel, &c., and have opened a commodious store at 83 Walker street, New York. Messrs. Walls and Bray were formerly of the firm of Armstrong, Walls & Co., have had large experience in their lines and are well known in the trade.

ON the morning of December 5, fire destroyed one of the warehouses of Orgill Brothers & Co., Memphis, Tenn. The loss was fully covered by insurance and as a majority of the goods contained in the warehouse was duplicate stock, the firm will suffer comparatively little inconvenience. Within two or three weeks the firm hope to get into their new six-story warehouse, now practically completed.

THE LUFKIN RULE COMPANY, Saginaw, Mich., has organized a new company to carry its Canadian business, which has secured a charter from the Canadian Government. The name of the new company is the Lufkin Rule Company of Canada, Ltd., and its office and factory are at Windsor, Ont. The company's business in the provinces is increasing satisfactorily, and plans are being made for a large addition to the plant.

THE FRANK MOSSBERG COMPANY, Attleboro, Mass., is now manufacturing the Auto Cle Automobile Wrench formerly made by the Quincy, Manchester, Sargent Company. The distribution of both the Auto Cle and Titus Cle Wrenches will be conducted from the office and factory of the Frank Mossberg Company.

S. B. MARTIN, Dalton, Ohio, is sending out an attractive lithograph in the interest of his Wonder Barn Door Hangers and Low-Down-High Store Ladders, which run on double beaded steel track. It is 15 x 20 in. in size, and will be sent to any one making application for it on receipt of a 2-cent stamp.

THE annual convention of the New England Hardware Dealers' Association, Charles L. Underhill, Somerville, secretary, will be held at Springfield, Mass., March 11 and 12, instead of the dates formerly announced. The Committee on Arrangements was obliged to make this change in time, as it was found that better accommodations could be secured. A Hardware exhibit will be held in connection with the meeting, and a Committee on Exhibit has been selected, consisting of F. E. Stacy, F. D. Foot and E. L. Graves.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM SNYDER & ROBINS, Asbury Park, N. J., who have recently embarked in the Hardware, Seed, Paint and Plumbing Supply business.

FROM H. M. WAITE HARDWARE COMPANY, Worcester, Mass., which has been incorporated with a capital stock of $25,000, to conduct a wholesale and retail business in Shelf Hardware.

FROM FARMERS HARDWARE & SUPPLY COMPANY, South Boston, Va., which is enlarging its stock with a view to adding a jobbing department to its business.

FROM THE SOUTHSIDE HARDWARE COMPANY, Everett, Pa., which carries a general line of Hardware, Paints, Vehicles, Implements, &c.

FROM GEO. C. HEYDE HARDWARE COMPANY, which succeeds Heyde-Cox-Townsend Hardware Company, Marion, Ill. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Sporting Goods, Building Papers, Mantels, Grates, &c.

FROM D. D. LABBE & SONS, who have purchased the business of S. L. Long, Eugene, Ore., carrying Shelf and Heavy Hardware, Agricultural Implements, Paints and Oils.

James Lower, a pioneer merchant of La Porte, Ind., died December 7, at the age of 87. His store was opened in 1852 in the same location which it now occupies. Mr. Lower filled an honored place in his community and was held in high regard.

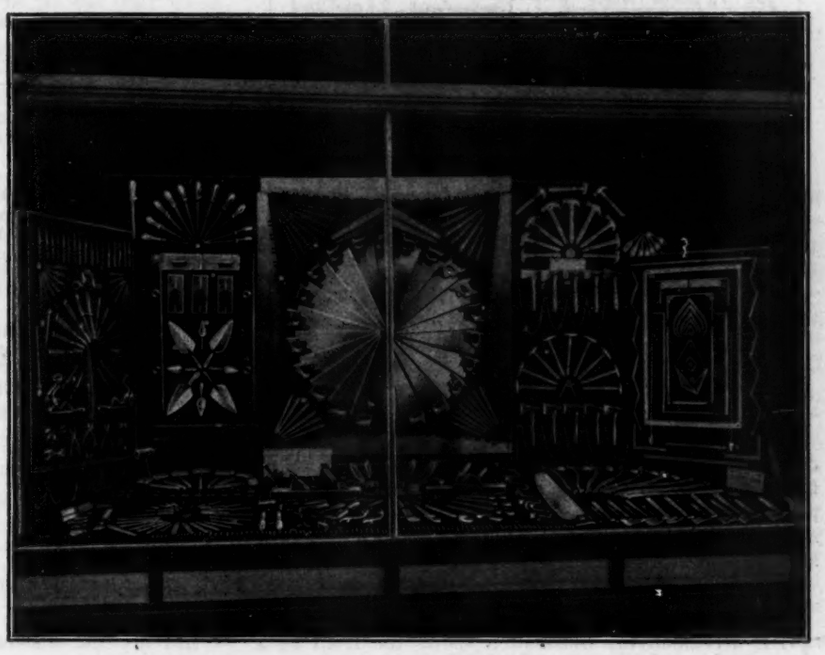
The building of J. M. Bowton & Son, Abingdon, Ill., with its stock of Hardware, Implements, Buggies and Harness, was totally destroyed by fire November 28, the loss being estimated at $23,000.

Holiday Trade in the Hardware Store.

A TOOL WINDOW FOR THE HOLIDAYS.

THE intelligent show window methods employed by the Harry Mead Company, Shawnee, Okla., have several times been referred to in these columns. Herewith we reproduce one of the holiday displays used by this house a year ago, which relates entirely to tools. The picture makes the general arrangement entirely clear. The rectangular display board at the right had on it Steel Squares, Levels, Calipers, &c. Next came a display of Hammers and Hatchets of various kinds. On the rectangle at the extreme left are shown Auger Bits, Bit Braces, &c., and on the right of these a lot of Trowels, bordered by two large Mason's Levels. Brass and Steel Chain was used in adding to the decorative effect. In the center of the background a large square was formed, with four Cross Cut Saws and a lot of Hand Saws arranged to form a circle inside. In the very center, where the points of the Saws come together, were placed two half dollars and a quarter—the price of a Saw. This feature is hidden in the illustration by the division in the glass.

The floor of the window was used for heavier tools, such as Planes, Axes, Braces, Mallets, Chisels, Wrenches and Files, the border being formed of large Nails and Screws. A false floor was put in to make the back of the window about a foot higher than the front, but another time a little more rise will be given. The window attracted a great deal of attention and sold many goods at the time. Results have shown that it also was of much benefit in increasing subsequent sales of tools.



A Holiday Tool Window.

LUBRICATING CHRISTMAS BUSINESS.

BY KNARF.

THERE is necessarily much extra labor connected with the preparation for and sale of Holiday Goods, both for the proprietors and employees of Hardware stores. Proprietors have an incentive in the expected increase of income, filling in of an otherwise dull season and the anticipation that some of the transient buyers of Holiday Goods will become well satisfied regular customers.

An Incentive for Clerks.

Clerks come in for a lot of hard work, longer hours and generally the only stimulus to buoy them up during the trying ordeal is the inspiration of the Christmas spirit, loyalty to the store and the desire to hold their jobs. The front part of the store is virtually turned upside down when counters and showcases are cleared of regular stock to make room for the goods that are to be pushed for two or three weeks. Much of this work, also the arranging of show windows and trimming the store with greens, must be done out of the regular hours of business. Then the remains of the wreck must be cleaned up and the store rearranged after people have finished their holiday buying. The store has to be kept open later than usual for two weeks; suggestions have to be made, with a weary brain and body and a permanent smile, to customers in answer to the oft repeated inquiry, "What present shall I buy?" for So-and so, and purchases must be delivered by stealth at a very late hour on Christmas Eve.

Some merchants have recognized the desirability of enthusing clerks at this time by offering something tangible to make them feel that they are vitally interestd in the success of the Christmas business. This has taken the shape of a bonus of 1 per cent. on sales of all articles designated as Christmas goods sold during the month of December. The prices of such articles are usually marked on tickets differing in color from those used on other goods, and when a sale is made the clerk puts his initials on the back of the ticket and turns it in with the cash, and he is given credit for the amount of the sale. A merchant can well stand this small expense in securing the hearty co-operation of salesmen, as Christmas goods yield an unusually large profit.

Taking Care of Shopworn Goods.

It is almost impossible entirely to clean out Christmas stock, and some odds and ends are bound to be left over. However carefully these may be put away, when they are again brought to light the following Christmas they are in a more or less sad condition. If the leftovers are silver or nickel plated ware they have become dull, and no amount of polishing will restore the luster originally given them at the factory. If goods are in sets, put up in boxes or cases, the containers are likely to be broken or soiled, and considerable expense attends replacing them with new ones. Cutlery almost always shows marks of rust or tarnish. Sleds, Skates, Toys, &c., have also lost their brightness.

Start Them on the Jump.

The punishment must be made to fit the crime in such cases, and this can be done by putting all such articles on a separate counter or table, far removed from other Christmas goods, and mark them at a price just enough reduced to make a talking point. This collection of odds and ends, among which some other slow selling goods may be scattered, to be known by the clerks as premium goods, can be marked with green price tickets.

Commission of 5 Per Cent.

The green price tickets mean that a commission of 5 per cent. will be paid to clerks on all sales of premium goods, and with this inducement it will be amazing how quickly this lot of junk will fade away, even to the last article.

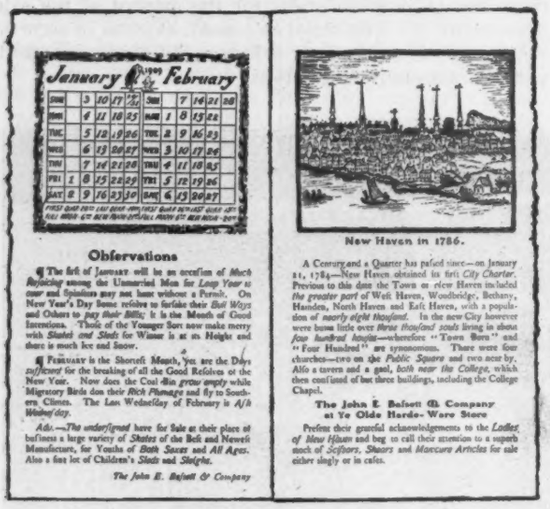
Penny Wise and Pound Foolish.

At first blush it may strike a merchant that 5 per cent. is too large a percentage to pay for getting these goods out of the way, but upon more mature consideration it will be seen that the money locked up in this truck for another year is worth at least 6 per cent.; also that anything not sold by the last day will have to be carried 12 months more, when it will be worth considerably less, not

only in appearance, but also because it may be out of style.

Bassett's New Haven Almanack.

THE John E. Bassett & Co., New Haven, Conn., has issued its New Haven Almanack for the year 1909. The publication of this quaint little booklet has become an annual advertising feature with this concern, and is



January February

Observations

¶ The first of January will be an occasion of *Much Rejoicing* among the Unmarried Men for *Leap Year* as court and Spinsters may not hunt without a Permit. On New Year's Day Some resolve to forsake their *Bad Ways* and Others to *pay their Bills*; It is the Month of Good Intentions. Thole of the Younger Sort now make merry with *Skates and Sleds* for Winter is at its Height and there is much Ice and Snow.

¶ FEBRUARY is the Shortest Month, Yet are the Days *sufficient* for the breaking of all the Good Resolves of the New Year. Now does the Coal *Bin grow empty* while Migratory Birds don their *Rich Plumage* and fly to Southern Climes. The Last Wednesday of February is *All Washes' day.*

Adv.—*The undersigned* have for Sale at their place of business a large variety of *Skates* of the Best and Newest Manufacture, for Youths of *Both Sexes* and *All Ages*. Also a fine lot of Children's *Sleds* and *Sleighs*.

The John E. Bassett & Company

New Haven in 1786.

A Century and a Quarter has passed since—on January 21, 1784—New Haven obtained its first *City Charter*. Previous to this date the Town or river Haven included *the greater part* of West Haven, Woodbridge, Bethany, Hamden, North Haven and East Haven, with a population of *nearly eight thousand*. In the new City however were borne little over *three thousand souls* living in about *four hundred houses*—wherefore "Town Born" and "Four Hundred" are synonomous. There were four churches—two on the *Public Square* and two near by. Also a tavern and a gaol, *both near the College*, which then consisted of but three buildings, including the College Chapel.

The John E. Bassett & Company at Ye Olde Harde-Ware Store

Profess their grateful acknowledgements to the *Ladies of New Haven* and beg to call their attention to a superb stock of *Scissors, Shears* and *Manicure Articles* for sale either singly or in cases.

Pages from the New Haven Almanack.

doubtless received with no little interest and pleasure by local customers. The present number, two facing pages of which are reproduced herewith, retains its characteristic style and get-up and suggestive but unobtrusive advertising features.

Christmas News.

THE accompanying illustration shows the front of a four-page circular published in the interest of the holiday trade by C. B. Smith, an enterprising Hardware merchant of Shrewsbury, Pa. It has a green and red

CHRISTMAS NEWS

ISSUED BY C. B. SMITH, GENERAL HARDWARE
CENTRE SQUARE, SHREWSBURY, PA.

Vol. 2 DECEMBER 1, 1908 No. 10

The Christmas Season with all its good time of GIFT GIVING is here. The old problem, what to give, faces you, again, and as a practical help in choosing your gifts we present this folder suggesting a few of the many choice things you will find in our store, also quoting prices showing at a glance how much money it will take if you deal with us. READ IT CAREFULLY, it is NEWSY and will HELP YOU to decide May you each have a MERRY CHRISTMAS and PROSPEROUS NEW YEAR.

SILVER-PLATED WARE

BUTTER DISHES
SUGAR BOWLS
PICKEL CASTORS
TABLE CASTORS
FRUIT AND NUT BOWLS
CAKE DISHES
JAPANESE NOVELTIES
Rogers' 1847 Genuine Silver-Plated Ware.
FRUIT OR BERRY STANDS
SYRUP PITCHERS WITH TRAYS
BREAD TRAYS
TWO PIECE SETS
THREE PIECE SETS
FOUR PIECE SETS
EXTRA SPECIAL
CRACKER JARS
CRUMB TRAYS
ROGERS' FLAT WARE
SOLID SILVER NICKELWARE

Any Item on this page will make a useful Christmas present.

Holiday Circular Issued by C. B. Smith, Shrewsbury, Pa.

holly border, and refers to an extensive assortment of articles suitable for Christmas giving, with accompanying illustrations and prices.

CONTENTS.

	Page.
A Heavy Strauss Bascule Bridge. Illustrated	1779
A Carlin Direct Driven Lever Shear. Illustrated	1780
Manhattan Bridge Cable Stringing Completed	1780
The Rivers and Harbors Convention	1780
Milling Automobile Cylinders. Illustrated	1781
A Colossal Roller Thrust Bearing	1781
Submarine Boat Contracts Awarded	1781
The Cleveland Foundrymen's Association	1781
The Continuous Sheet Mill Patents. Illustrated	1782
Foundrymen Act on Pig Iron and Coke Shortages	1784
Advances in Freight Rates January 1	1784
The Northern Type S Electric Motor. Illustrated	1785
An Interesting Link-Belt Handling Equipment. Illustrated	1786
The American Metal Numbering Machine. Illustrated	1787
The New Sturtevant Ring-Roll Mill. Illustrated	1788
Better Light and Air for Miners	1789
The Phelps-Dodge Consolidation	1790
Customs Decisions	1792
The Alliance Combined Stripping and Charging Crane. Illustrated	1793
Stable Steel Prices Defended by Judge Gary	1794
Industrial Accidents	1795
The Associated Foundry Foremen of Philadelphia and Vicinity	1795
The Cincinnati Metal Trades Association	1796
Chemical Engineers at Pittsburgh	1797
Copper and Copper Alloys	1798
A Cleveland Exposition Proposed	1800
Tariff Hearings at Washington	1801
A Canadian Iron Ore Deposit to Be Worked	1807
Charles M. Schwab's Tariff Testimony	1808
Editorial:	
The Gary Plant in British Eyes	1814
The Small Shop and the Apprentice System	1814
The Saloon and the Noon Hour	1815
American Sheet & Tin Plate Company Changes. Portrait.	1816
The Outlook for Aluminum	1816
A Nonmagnetic Yacht	1816
Obituary. Portrait	1817
Personal	1817
The French Minette Ore District	1818
The Alfred E. Norton Company	1818
News of the Works:	
Iron and Steel	1819
General Machinery	1819
Power Plant Equipment	1819
Foundries	1819
Fires	1819
Bridges and Buildings	1819
Hardware	1819
Miscellaneous	1819
The Southern Attitude Toward Railroads	1820
No More Wire Dumping in Canada	1820
The Iron and Metal Trades:	
A Comparison of Prices	1821
Chicago	1821
Birmingham	1823
San Francisco	1824
St. Louis	1825
Pittsburgh	1826
Philadelphia	1828
Cleveland	1829
Buffalo	1829
Cincinnati	1830
New York	1831
Iron and Industrial Stocks	1831
Metal Market	1832
The British Iron Trade	1832
American and British Foundry Irons	1832
Steel for Magnets. Illustrated	1833
Spang-Chalfant Improvements	1833
German Interests to Control United-Otto By-Product Coke Ovens	1834
Buffalo-Susquehanna Improvements	1834
The Machinery Trade:	
New York Machinery Market	1835
Chicago Machinery Market	1835
Cincinnati Machinery Market	1836
New England Machinery Market	1836
Cleveland Machinery Market	1837
Philadelphia Machinery Market	1838
Government Purchases	1838
Trade Publications	1839
Hardware:	
Condition of Trade	1840
Notes on Prices	1843
Trade Items	1846
Requests for Catalogues, &c	1846
Holiday Trade in the Hardware Store. Illustrated	1847
Bassett's New Haven Almanack. Illustrated	1848
Christmas News. Illustrated	1848
The Parcel Post Question	1849
Catalogue of McLennan, McFeely & Co.	1851
Ninth National Automobile Show	1851
A Christmas Advertisement. Illustrated	1851
I. E. Palmer Company's Catalogue	1851
Implement Merchants in Convention	1852
Correspondence	1854
Vatudrip Rust Preventive. Illustrated	1855
New Styles of Carvers	1855
The Johnson Lever-Fold Mower	1855
Wm. E. Pratt Mfg. Company	1855
Cummins' Postage Stamp Perforators. Illustrated	1855
National Fence and Post Brace. Illustrated	1856
Rubber Insulated Linemen's Pliers. Illustrated	1856
Leonard's Grand Rapids Refrigerators. Illustrated	1856
The Planet, Jr., Horse Hoe, Cultivator, Hiller and Vine Turner No. 10. Illustrated	1856
Plate Carrier. Illustrated	1857
Elton Design Inside Set. Illustrated	1857
Current Hardware Prices	1858

THE PARCEL POST QUESTION.

HARDWAREMEN ACTIVE AGAINST PARCEL POST.

L. D. NISH, Elgin, Ill., the energetic secretary of the Illinois Retail Hardware Association, writes as follows, expressing his intention of circularizing the country newspapers of his State as well as the Hardware merchants with copies of the reprint of parcel post matter which has recently appeared in *The Iron Age:*

Country Newspapers.

I am in receipt of the eight-page folder reprint of parcel post matter from *The Iron Age* and believe that it will be good material to send out to our membership. I would also like to send it to 160 country newspapers whom I have on the list that would take up the publication of such matter.

Altogether this means 1300 copies of the reprint. This is a large number to request of you, but I am sure it will be good matter to put forward. At the same time I expect to follow it up with some individual letters to the membership concerning it and I hope it will be effective matter and do good work.

Petition Signed by All Merchants.

G. V. Thompson, Thompson & Co., Mt. Jewett, Pa., ex-president of the Pennsylvania Retail Hardware Association, circulated a petition which was signed by every merchant in the town. Mr. Thompson writes:

It is a very busy time with us at this season, just before the holidays, but we have taken the time to circulate a petition making a protest against the parcel post legislation and have succeeded in getting all the merchants of our town, about 25 in all, to sign it, which we are mailing along with a letter to our Congressman. We thought perhaps it would be some satisfaction to you to know that some one had followed out your suggestion, and we hope that there will be a great many who will do this besides ourselves.

A New York Protest.

Practically all the business men of Wellsville, N. Y., have signed a petition against the establishment of a parcel post, which has been sent to their Congressional Representative, who in acknowledging its receipt states that he will present it to the House of Representatives. The petition is headed by the name of the Hoyt Hardware Company.

What Traveling Salesmen Can Do.

The following letter from western New York emphasizes the importance of jobbers and manufacturers taking an interest in the opposition to parcel post, and through their traveling representatives influencing the retail merchants to move in the matter:

To the Editor: From the viewpoint of a traveling salesman, I wish to ask is it not time that the jobbers and manufacturers in each and every line of merchandise bestirred themselves in opposition to a parcel post? It is a question of no small concern to them as well as the retail merchant, and I believe that it is within their power to awaken the retailer to the seriousness of the situation.

There is no class of men to whom the retailer looks more for good advice than the salesman, and if the latter will consider a moment he must see that an increase in his sales is largely dependent upon the defeat of a parcel post bill.

Now, assuming that he has already taken this view of the matter, I contend that he is the man to inject the necessary argument into the retailer. This being the case, it seems to me that the key to the whole campaign is in the office of *The Iron Age.*

Cause a letter to be sent to the editors of all trade journals calling upon them to communicate with the jobbers and manufacturers on their respective lists, and they in turn to put it to their own staff of salesmen as to the vital importance of immediate action on their part in arousing the retail merchant to the necessity of entering a strong protest to his representative. As soon as the retailer is convinced that co-operation has become a fact, he will do his part with a will. I candidly believe that the result in such a campaign would be argument sufficient to defeat the bill. DO IT RIGHT NOW.

SALESMAN.

PARCEL POST AND POSTAL NOTE BILLS BEFORE CONGRESS.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., December 15, 1908.

THE parcel post mill has begun to grind under the auspices of the Post Office Department, and it is already clear that the retail interests in this country must make a campaign of unprecedented energy if they are to prevent injurious legislation of far-reaching consequence. President Roosevelt has made good the promise given to the Postmaster-General that in his Message to Congress he would favor an experimental parcel post on rural routes.

The strangest feature of the official movement for a rural parcel post is the fact that it is being urged on Congress as of the greatest possible benefit to the "country storekeeper," when, as a matter of fact, these merchants are doing everything in their power to prevent the proposed legislation. Rural retailers as a class have never been accused of stupidity or lack of "enlightened selfishness"; the mystery is how the Postmaster-General has been able to discover a "positive boom" for them which they so obtusely fail to appreciate.

Mr. Lafean's Bill for Experimental Parcel Post.

Immediately following the presentation of the President's Message in the House, Representative Lafean of Pennsylvania introduced a bill intended to carry out the Postmaster-General's scheme. It provides as follows:

Be it enacted, &c., That the Postmaster-General, for the purpose of ascertaining the practicability of establishing a rural parcel post system on the rural delivery routes throughout the United States, be, and he is hereby, authorized and directed to experiment and report to Congress on the first Monday of December, 1909, the result of such experiment by establishing a limited local parcel post confined entirely to rural delivery routes in not to exceed four counties in the United States for packages of fourth-class matter originating on a rural route or at its distributing post-office for delivery by rural carriers to patrons thereof at such special rate of postage and under such regulations as the Postmaster-General may deem advisable, and that no parcel shall be accepted from any person acting as representative for any person or company not a resident on such rural delivery routes or in the town from which they emanate, and that only such parcels be received for delivery at the special rates of postage as are offered by bona fide merchants or dealers whose regular places of business are on such rural delivery routes in the ordinary and regular course of their business, and in their individual capacity by residents on such routes.

The Real Danger to Be Feared.

The absurdities of the restrictions sought to be placed upon such a rural service as the Postmaster-General proposes have already been pointed out in this correspondence. It should be remembered, however, that the danger lies not in the passage of the Lafean bill, which would probably be declared unconstitutional as discriminating against one class of citizens in favor of another, but in the adoption by Congress of the basic principle of a rural parcel post without any restriction whatever against the giant mail order concerns.

Mr. Kincaid's Post Check Currency Bill.

Paternalistic schemes always go hand in hand; hence it is not surprising that the post check currency project should have bobbed up on the same day that Mr. Lafean presented his populistic parcel post bill. Representative Kincaid of Nebraska introduced the measure, understood to have been prepared with the approval of the Post Office Department, which is designed to provide an easy

method of sending money away from home. This measure reads as follows:

Be it enacted, &c., That to facilitate the transmission of small sums through the mails the Postmaster-General shall be, and is hereby, empowered to authorize postmasters at money order offices, and at such other offices as he may designate, under such regulations as he may from time to time prescribe, to issue money orders, without corresponding advices, on a form to be prescribed and furnished by him, and a money order issued on such form shall be designated and known as a "postal note," and, in addition to its face value, a fee, to be fixed by the Postmaster-General, but not to exceed 2 cents, shall be charged for each postal note issued, except that postal notes for amounts less than 10 cents may be issued without fee, at the discretion of the Postmaster-General.

Provided, That postal notes issued under the provisions of this act shall be for fixed amounts not above $2.50, and shall be redeemable or payable at any money order post office, or at any other post office designated by the Postmaster-General for the purpose of redemption or payment thereof, but shall not be negotiable or transferrable through indorsement.

And provided further, That such postal notes shall not be payable after the expiration of six calendar months from the last day of the month of their issue.

Sec. 2. That after a postal note has once been paid, the United States shall not be liable on account of any further claim for the amount thereof.

Sec. 3. That postmasters at offices of the third and fourth classes may be allowed as compensation for issuing postal notes such part of the fees thereon as the Postmaster-General may prescribe, but such commissions shall not exceed the rate of $1 per hundred notes, and no commission shall be allowed for the sale of postal notes issued without fee.

Sec. 4. That a duplicate of a postal note which has become invalid by reason of age may be issued to the owner of the original by the Post Office Department under such regulations as the Postmaster-General may prescribe. In like manner, provided application therefor be made before the expiration of six months from the date when the original would have become invalid by reason of age, upon production of such proof of ownership and loss or destruction as the Postmaster-General may require, a duplicate may be issued in lieu of a postal note which has been lost or destroyed; but no duplicate shall be issued within the period during which the original would have been payable on presentation in due form, nor at any time in lieu of a postal note for which no fee has been paid. An additional fee equal to the fee charged for the original shall be exacted for the issue of a duplicate postal note. Each duplicate issued shall be valid for the same length of time as was the original and no longer. In case of nonpayment of the duplicate within the period of its validity, however, it may be renewed upon surrender of the same to the Post Office Department with an application in due form for renewal thereof.

Sec. 5. That all provisions of the statutes relating to money orders, so far as the same may be applicable and not inconsistent with the provisions of this act, shall apply to the postal notes herein described.

Sec. 6. That the sum of $150,000, or so much thereof as may be necessary, be, and the same is hereby, appropriated out of any money in the Treasury not otherwise appropriated, to be used and expended as the Postmaster-General may direct, for carrying into effect the provisions of this act during the fiscal year ending June 30, 1910; Provided, That of said amount not exceeding $20,000 may be used in payment of the salaries of one postal note agent and necessary assistants, and such additional clerks as for the purposes of this act may be required in the Post Office Department.

Post Office Bill Will Be Reported Early, So Merchants Should Be Prompt in Their Protests.

Owing to the shortness of the session, every possible effort is being made to expedite the preparation and consideration of the annual Post Office Appropriation bill. It therefore behooves retail merchants and others opposed to these postal "reform" schemes to communicate their view to their Senators and Representatives without loss of time. The Post Office bill will probably be reported to the House immediately after the holiday recess, and where practicable merchants should call on their Congressional representatives while the latter are spending the holidays in their homes.

OBJECTIONS TO RURAL DELIVERY.

To the Editor: I have read with much interest your recent editorials regarding business conditions in the smaller towns and villages, and the effect thereon of the rural delivery and parcel post propositions. As a resident of a small town four miles removed from a railroad, a type of which there are thousands scattered throughout this broad land, I will say that I think that

The Greatest Handicap

experienced by such places is a lack of proper transportation facilities. In this it seems to me that the Government is very much in error in its policy of discontinuing star route or stage line service wherever possible and substituting rural delivery in its place.

In May, 1904, a county system of rural delivery was inaugurated in this (Bradford) county. As one who has had a chance to observe the workings of this system at first hand, I say that the system is as much a failure as a success. The territory was fairly well served by post offices and had

A System of Stage Lines,

which latter made it possible to travel by public conveyance from nearly any point in the county to any other point. It afforded connections between the country villages and railroad stations, connected one village with the other, and gave an excellent cross country service from one railroad to the other in a county in which the two main line railroads run in a parallel direction at considerable distance apart and which has no cross country railroads.

All This Was Changed

with the institution of rural delivery service. Seventy-six post offices were taken up, and this excellent system of stage or star route service was abandoned. The stages carried passengers, freight and express, as well as mail, and their abandonment certainly does work hardships to the country villages in that they depended largely upon them for these facilities, and were given as a rule better mail service than they now receive.

Now, if the average village resident wishes to go to the station or some other town, he must hire a liveryman or some other person to take him at considerable increased expense (unless he prefers to walk, which most of us do not), and when he returns he must arrange for the same service at considerable trouble. To the person in the city who wishes to visit the country, or country village, the same problem presents, and there is no denying that this matter is having a very harmful effect upon the country villages and country life generally.

Mail Service Worse Instead of Better.

In our own village (Granville Center) we had an excellent stage service giving us two round trips per week day to our railroad station at Cowley, 4 miles distant, and one round trip per week day to West Franklin, 5 miles distant, where connection was made with other stages to Canton, Towanda (our county seat), and intermediahe points. As an example of public convenience I will say that the stage service to Towanda, 18 miles distant, was direct, while now, to reach that place by public conveyance, one must first get to the railroad station and then travel by rail 68 miles over three roads, or 67 miles over two roads. These stage lines, with others, was ordered discontinued, but by hard work we succeeded in having the line to Cowley re-established, the Post Office Department providing for one trip per day, and the stage proprietor making the second trip without remuneration from the Department. This was continued for two years, when it was again ordered discontinued. Then the

Citizens Raised a Sum of Money

to take the place of that received from the Department by the stage proprietor, and the double daily service was continued for another year, during which time the mail was carried at no expense to the Government. At the end of the year the financial depression was on and it was not possible to raise a sufficient sum to continue this service, and we now have a stage service of only one trip per day, which, however, carries mail at no cost to the Government. A rural carrier brings a locked pouch, so that we have two deliveries, but only one dispatch, and this is a considerable inconvenience from a business standpoint, aside from very much decreased stage facilities. In this locality

Rural Delivery Is Not Needed

as much as in some others, for the reason that the farmers make daily trips to the creameries in the villages and had or have opportunity to visit the post offices. Their children are brought to central graded or high schools, and have the same opportunities, and the rural telephone so thoroughly covers the territory that the

rural delivery is of second importance. The rural delivery service is too expensive. Star route service is successfully operated under the plan of competitive bidding and covers its territory at much lower pay proportionately and provides a larger and more useful service as well. The rural delivery service is too much limited or restricted in its character. It gives no passenger nor general freight service such as star routes and stages give, and the proposed

Parcel Post Will Further Handicap

its usefulness as a local convenience. As a parcel carrying proposition it has not been extensively used in this locality, even under conditions which make for its use more than those now proposed. And it seems to me that a policy which might be adopted with better results is to give star route service over main roads, as before, letting the driver take up and deliver mail en route, as is customary, and use the rural delivery as an auxiliary service on side roads and over territory in which a lighter service might be sufficient. Of course the Government is not in the stage business; neither is it in the railroad or steamship business. But the subsidies which it pays for service enables transportation facilities to be given to the public which could not be given otherwise.

Trusting that others of your readers will express themselves upon this subject of postal matters, I am, yours truly, H. L. H.

GRANVILLE CENTER, PA.

T. J. FERNLEY'S EFFECTIVE WORK.

Active opponents of legislation favorable to parcel post recognize the telling work which has been done by T. James Fernley, the efficient secretary of the National Hardware Association. In connection with the present active efforts to further such legislation Mr. Fernley has made excellent use of the reprints of editorial matter furnished by *The Iron Age*. Copies of this reprint he has sent to many trade associations and to various commercial and trade organizations and to the officers of all the boards of trade connected with the National Board of Trade. He has also sent letters to every member of the National Hardware Association located where there is a local board of trade or chamber of commerce, asking that they bring the matter up for open discussion in these organizations. Appreciation is expressed by Mr. Fernley of the value of the reprints in furnishing those who are opposed to parcel post with a clear and compact statement of the arguments which may be adduced on their side of the case.

Catalogue of McLennan, McFeely & Co.

A NOTABLE addition to the list of jobbing Hardware catalogues has just been issued by McLennan, McFeely & Co., Vancouver, B. C. It is a large loose leaf book 11 x 12 in. in size, handsomely and substantially bound and containing over 1700 pages. The catalogue is furnished with a complete alphabetical index and is divided for convenience into the following general divisions: Mechanics', Lumbering, Logging, Farm and Garden Tools; Miscellaneous and Heavy Hardware, Ship Chandlery, Steamfitters' Supplies, Belting, Packing, &c.; Paints, Glass, &c.; House Furnishings, Stoves, Cutlery, &c.; Builders' and Shelf Hardware; Guns and general Sporting Goods. All lines are profusely illustrated. A feature of unusual interest is a separate section devoted to useful information, tables, expert suggestions regarding different lines, freight classifications, &c., all indexed and arranged in a way that should prove very useful to retail merchants and their employees. This enterprising and representative house and its customers in the Canadian Northwest are to be congratulated on the publication of a catalogue which in many respects is an admirable volume.

Ninth National Automobile Show.

THE ninth national Automobile Show, under the auspices of the Association of Licensed Automobile Manufacturers, will be held in Madison Square Garden, New York City, January 16-23, inclusive. Motor Cycles, or "bachelor Automobiles," as one young woman termed them, will be shown by the makers, about 20 in number, who recently organized under the name of the Motor Cycle Manufacturers' Association. The show will be strictly American, there being no exhibition of foreign cars in the display. The decorative plans contemplate elaborate details, including a large garden fountain near the Madison avenue entrance and a massive arch at the Fourth avenue end, 87 ft. high and 48 ft. wide, in connection with which there will be three massive plate mirrors, each about 20 ft. wide, tilted at top to increase the view of the whole interior of the amphitheater floor.

A CHRISTMAS ADVERTISEMENT.

THE accompanying illustration shows a portion of a realistic Christmas newspaper advertisement. It breathes the holiday spirit, hinting broadly, as it does, of the old chimney, Santa Claus and the well filled stockings of the children borrowed for the occasion. The verse about Old Kriss Krinkle suggests more bountifully filled stockings for the youngsters, as parents recollect the big red apple and hickory switch in their stockings, which some parents considered ample for Christmas gifts in the

A Christmas Advertisement.

good old days. The advertisement also suggests to readers that the things shown on the chimney shelf, or others of similar character, are more desirable than less practical ones to give to older friends, as household articles are useful as well as ornamental. The advertisement appears to be an ideal one, covering possibilities for an entire family, besides carrying with it the impression that the advertiser is well prepared to cater to the Christmas trade.

I. E. Palmer Company's Catalogue.

THE Hammock and Accessories catalogue for 1909, issued by the I. E. Palmer Company, Middletown, Conn., illustrates its line of colors and designs for the coming season. These are quite extensive and carefully selected, the designs having been prepared by an experienced artist. The aim has been to keep away from the stereotyped floral, ornamental and tapestry designs, and to present that which is strikingly original and artistically correct in the line of Hammock designing. A novelty is shown in a line of Utopia Couch Hammocks, which can be suspended from supports furnished by the company or from ceilings.

THE WELLAND VALE MFG. COMPANY, St. Catherines, Ont., has been much annoyed by the circulation of an erroneous report that its factory was destroyed by fire. A fire on some old premises where the company had a little material stored was the only basis for the report. The trade will be glad to know that the company's factory is in operation as usual.

IMPLEMENT MERCHANTS IN CONVENTION.

THE tenth annual convention of the Retail Implement Dealers' Association of South Dakota, southwestern Minnesota and northwestern Iowa was held on the 9th, 10th and 11th inst., at Mitchell, S. D. The meeting was called to order by J. E. McDougall, Britton, president of the association. Mr. McDougall in his able and interesting presidential address stated that the association had had a steady growth during the past year, which fact, he said, was largely due to the energetic efforts of Secretary Barton. He regretted, however, that there were so many implement men still outside the association. In the association's territory were about 600 implement merchants, of whom about 20 per cent. were members of the association. He recommended that a Committee on Membership be appointed, and that the association maintain headquarters at the State Fair, where the visiting implement men would find a congenial place for assembly and thus become better acquainted with each other and with the purposes of the organization.

Secretary Barton's Report.

Mr. Barton in his report as secretary said that there had never been a time in the history of the business when there was so much need for united effort on the part of all regular merchants to keep trade in legitimate channels. He said that the time was fast approaching when manufacturers must adopt the policy of handling their output through the regular trade or do a mail order or scalping business, and large united bodies of merchants, he said, would help some of the manufacturers to decide in the right way. Very few complaints, he said, had been filed by members during the year, but he was afraid that all the members did not realize the importance of having a record of all irregular shipments in the hands of the secretary. Mr. Barton's report as treasurer showed that the association was in good financial condition.

The Addition of Specialties.

Quite an interesting discussion was had in regard to adding specialties to the merchants' lines. R. E. Hubbard, Henry, S. D., said that about a year ago he had added the sale of Lightning Rods and was well satisfied with results so far. He had made a profit from his Lightning Rod sales; larger in proportion than on Implements.

President McDougall stated that he had found Lightning Rods a very profitable line.

O. E. Mesick, Gettysburg, S. D., had also added Lightning Rods during the year, and was very much pleased with his experience. He likewise found Woven Wire a ready seller; not very much time required to sell it and it paid a good profit.

A. O. Stakke, Beresford, S. D., handles Sewing Machines as a side line, and has met with good success.

B. O. Lee, Watertown, S. D., said that he handled a number of specialties, and that they netted him a profit of from 25 to 40 per cent.

R. E. Hubbard cautioned the members against "butting in" on other lines of business when adding specialties, he himself aiming to add only such articles as were not carried by other business men in his town.

H. L. Eckhart, Huron, S. D., disagreed with Mr. Hubbard on the "butt in" proposition, and stated that he sold everything upon which he could make a profit, whether it was a line carried by houses in other lines of business or not.

Some of the merchants located in the Southern territory stated that Seed Corn and other Seed had become an important part of the business of many of the Implement men in his section. Several carloads of Seed Corn were each year sent from Clay County and Vermillion to Implement merchants, especially those of Iowa, but few of the merchants in the Northern territory have as yet handled Seed. The information given during the convention by the members from the south will probably result in inducing merchants in the north to add such Seed as will be in demand in their locality.

Handling Automobiles.

The subject of farm machinery men engaging in the sale of automobiles was discussed at some length. A few members argued that the sale of this line did not come in well, as the handling of automobiles was a business in itself, for if successfully carried on it would take so much of the merchant's time that he would be certain to neglect his farm machinery and vehicle line.

The consensus of opinion, however, was in favor of merchants taking advantage of the opportunity to handle automobiles, which in the course of a few years it was thought would largely displace buggies. In the natural course of things, too, the price of automobiles would be reduced so that there would be an increasing demand for them.

Only about 5 per cent. of the merchants in the territory covered by the association have as yet added automobiles to their regular business. That this percentage would show a marked increase during the next few months seems certain in view of the statements made during the discussion of the subject.

Catalogue House Competition.

An interesting fact brought out during the discussion on catalogue house competition was that in many localities this form of competition, so far as goods handled by farm machinery and vehicle men is concerned, has become a thing of the past. Many merchants testified to this gratifying condition of affairs, which it was declared was due to the flimsy character of the goods furnished by the catalogue houses; farmers having made one purchase and having been "stung" did not wish to repeat the experience, and have since sworn allegiance to the local merchant.

E. J. Mannix, editor of the *Commercial News*, Sioux Falls, S. D., was one of the speakers. He gave an outline of his plan of running month by month in his publication a table containing the names of manufacturers who refuse to declare themselves in favor of the retailer and against the mail order houses, and he said that this was proving very effective in bringing manufacturers to time. He said that scarcely a day passed without his receiving from some listed manufacturer the affidavit which was necessary in order to have his name taken out of the published list.

R. J. O'Dell, Montrose, S. D., stated that he made a practice of purchasing from people in territory tributary to Montrose, Stoves and Cream Separators bought from mail order houses, which had soon become worthless owing to the poor material of which they were composed. The Stoves and Separators thus purchased are placed on exhibition in his store, Mr. O'Dell taking pains to have the exhibits adorned with a history of where they were purchased, time in use and other interesting details. This method he found very effective in holding for him on a number of occasions trade which otherwise might have gone to a catalogue or mail order house.

Proposed Shortening of Terms.

The discussion on the subject of the proposed shortening of terms brought out the almost unanimous opinion of the members present that the shortening of terms to April 1 would work an injustice to the merchants, particularly in the northern territory, where the season was a week or two later than in Iowa and other States in the South. A few of the merchants favored April 1 as the discount day, stating that retailers could pay as well then as on June or July 1. The majority, however, favored the later date.

Address of F. J. Vetch.

As a representative of the South Dakota Traveling Men's Association, F. J. Vetch, Sioux City, Iowa, addressed the convention. Among other things, Mr. Vetch alluded to the fact that on innumerable occasions the traveling men had pleaded the cause of the retailer and that the merchant had no better friend than the knight of the grip. His address was along lines tending to improve relations between competing merchants, maintaining that the best of good fellowship should exist between them and that this would make life worth living and result in improvement all round. He urged the members

not to infringe on the business of merchants in other lines, as only in this way could trade be kept on a legitimate basis.

Report on National Federation.

President McDougall, who was the delegate of the association at the last convention of the National Federation, made a report of the proceedings. He was enthusiastic in his praise of what the Federation is accomplishing for the retail merchant, and said that it was well worth the hearty support of every retailer and every State association. He cited various examples showing what the Federation had done in behalf of the trade.

Address of W. S. Thomas.

W. B. Brinton, Dixon, Ill., president of the National Association of Agricultural Implement and Vehicle Manufacturers, who was on the programme for an address, was unavoidably prevented from attending. His place on the programme was filled by W. S. Thomas, Springfield, Ohio, who is well known to the members of the association, having addressed them on two former occasions. Mr. Thomas spoke at length on the question of handling repairs, and said that in the past many claims filed with the best intentions had been allowed which should never have been granted. He said that the farm machinery business in these days was conducted on very small margins, and it was necessary that the question of repairs should be looked after very closely. He urged merchants not to give parts free to the farmers, but require them to bring in the old pieces, thus protecting the merchants by enabling them to ship the parts back to the factory and receive proper credit. He further urged merchants to conduct their repair business on the same basis as their farm machinery and vehicle business—if the merchant is overstocked ship the surplus back.

Shorter Terms.

On the subject of shorter terms, Mr. Thomas stated that farmers all over the country were in good financial condition, and that it would not be a hardship upon them if purchases in this line were brought down to practically a cash basis. He pointed out that the manufacturers have to pay cash for their material and that if they are given 30 or 60 days' time they have to pay interest on the amounts due. Mr. Thomas expressed the opinion that not one merchant in 50 would voluntarily shorten his terms, and would not do so at all until the manufacturers shortened their terms to the merchant, thus compelling him in self-defense to shorten his terms to customers. "Why not all pull together on this cash basis proposition?" he asked.

He also said that bringing the farmers around to nearly a cash basis would put the merchants in a better position to combat catalogue house competition successfully.

Cost of Doing Business.

He urged merchants to pay particular attention to the cost of doing business. He had gathered figures in reference to the cost of carrying on the retail business, and said that it varied all the way from 15 to 25 per cent. Among the items which he said should be included in the cost of doing business were the following:

Rent, or interest on the money invested if the merchant is owner of his building.
Light and heat.
The proprietor's salary.
Clerk hire and help generally.
Freight.
Insurance.
Extra livery hire.
Postage.
Telephone and telegraph.
Delivery of goods.
Expense of journeys made for the purpose of settling with farmers.
Losses on accounts.
Interest on goods carried for periods of six months or over.
Depreciation on goods carried over.
Taxes.
Donations and subscriptions to charities and other purposes.
Interest on sums borrowed from time to time.
Interest on capital invested.

Mr. Thomas cited the case of a merchant who sold goods at too close a margin and then wanted the factory to make a discount to give him the desired profit on sales.

He expressed the opinion that the traveling men could do much to improve conditions with respect to cost of doing business, especially in the case of merchants just entering business, by educating them along these lines and encouraging them to add more to the cost of the goods than is now the practice.

Resolutions.

Among the resolutions adopted by the association were the following:

Resolved, That the work of the National Federation merits our confidence and appreciation, and we pledge anew our support to its officials and their work, and we heartily indorse the resolutions passed by the Federation at its last annual meeting.

Resolved, That this association is opposed to the passage of a parcel post law, believing that it will be detrimental to the best interests of the people of the smaller cities and towns of our land and in favor of the larger cities; be it further

Resolved, That a copy of this resolution be sent to our Senators and members of Congress.

Resolved, That it is the sense of this convention that the sale of Binding Twine properly belongs to the retail implement dealer, and we therefore deprecate the practice of some jobbers and manufacturers selling Twine to people who have no connection with the retail implement trade.

Whereas, We believe the organization of local clubs to be of great benefit to the retail dealer;

Resolved, That we earnestly urge the organization of such clubs by the members of this association wherever practicable.

Resolved, That this association is opposed to shortening the term of discount on spring goods from June 1 or July 1 to April 1 in territory covered by this association, as April 1 is too early for this territory, and in many cases would work a hardship to dealers; and be it further

Resolved, That where there is a shortening of the time of payment or of the term of discount there should be a corresponding decrease in price.

Resolved, That it is the sense of this convention that November 1 is too early a date for the fall payment of harvesting machinery by the retail dealer, and that we believe that a payment of one-half of such accounts November 1 and one-half December 1 would be just and equitable to both the dealer and the manufacturer.

Resolved, That this convention favors the establishment of association headquarters at our State Fair, as productive of much good to our association, and that the officers of this association be authorized to establish such headquarters.

Resolved, That we are opposed to the sale of Implements and Vehicles to consumers at the State Fair, unless such goods are shipped through some local dealer in the vicinity where such Implements or Vehicles are delivered.

Resolved, That this association is opposed to the establishment of branch stores in country towns by jobbers or manufacturers for the purpose of selling goods at retail, as we believe that the retail trade justly belongs to the retail dealer, and we demand the elimination of such branch houses in the interest of fair play and honest competition.

Whereas, The best men engaged in the manufacture and jobbing of Farm Implements and Vehicles have cheerfully and conscientiously aided us in the betterment of trade conditions, by refusing to sell to the consumer direct, or to the catalogue houses; be it

Resolved, That the principle of trade ethics is a principle binding equally on all concerned, and means honesty and fair dealing on our part and loyalty to those who are loyal to us.

Resolved, That we reaffirm our declaration of 1907 as being opposed to the use of canvassers by Harvester companies, as being opposed to the best interests of the dealer, and we commend the efforts of some of such companies to abstain as far as possible from the use of such canvassers.

Resolved, That we deprecate the methods of some of the Thresher companies to secure trade regardless of the retail dealer, as not only being generally detrimental to the retail trade, but as unfair to those companies who are making an honest effort to confine their business to regular lines of trade.

Whereas, Past legislatures of this State have not had a committee to which bills referring to commerce and retail interests in the State of South Dakota could be referred and acted upon by men with full knowledge of business conditions and demands; and

Whereas, Other States have a committee to which such bills are referred; therefore be it

Resolved, That future sessions of the Legislature provide for a committee on commerce and retail trade; be it further

Resolved, That a copy of this resolution be mailed to the Governor, Lieutenant-Governor and the members of the Legislature, with a request for their personal views with reference to carrying out its provisions.

Election of Officers.

The election of officers for the ensuing year resulted as follows, Messrs. McDougall, Wattson and Barton being re-elected:

PRESIDENT, J. E. McDougall, Britton, S. D.
VICE-PRESIDENT, R. G. Wattson, Chamberlain, S. D.
SECRETARY-TREASURER, E. C. Barton, Vermillion, S. D.
DIRECTORS: George Waskey, Madison, S. D.; F. V. Campbell, Redfield, S. D.
GRIEVANCE COMMITTEE: E. B. Van Alstine, Mitchell, S. D.; E. C. Barton, Vermillion, S. D.

Correspondence.

WARRANTING CUTLERY.

To the Editor: Your full reports of the hearing before the Ways and Means Committee are a grand achievement, and as a book of reference *The Iron Age* will serve a good purpose years hence.

One contention in these tariff hearings struck me as being absurd, as it happens to be at least one thing that I know something about. This was the argument you reported which one man made for an increase in duties on Cutlery upon the plea that it was necessary in order for the American manufacturer to make any money.

Manufacturers Should Not Consign or Guarantee.

If the American pocket cutlery manufacturers would band together on the nonguarantee question and work with half the fidelity they do in trying to secure a still higher protective tariff and not *loan* their product to the jobber or the retail dealer under their "fully warranted" fallacy, there would be a lot of money saved in doing so. When the jobber of Cutlery is in position not only to fully warrant and redeem broken and worn out Knives, Scissors, Razors, &c., but to consign his goods in a showcase, which also costs something, somebody is losing money and the chances are very much against it being the jobber. My recollections, extending considerably over one-third of a century in the line, is that poor Cutlery was only complained of when bought for good goods by well meaning dealers prior to recent years—or, I'll say since high tariffs have been in force. This was a reasonable complaint and was dealt with accordingly. Now the dealer in placing his order is told over and over again by the salesman to warrant each and every article and to give a new one without controversy with his customer, no matter in what condition it may be returned to him.

Abuses of Warranty.

The result is there are thousands of young men today who do not know how to sharpen a Pocket Knife simply because all they have to do when their Knife gets dull, rusted or even stained is to return it to his dealer and get a nice new one that will shine and whittle for another brief period. Now I believe the American manufacturers as a whole receive a sufficient profit on their wares at their billing prices, and if they did not later on permit their profits to be scaled below cost they would be very prosperous. The question of quality has nothing whatever to do with the practice of warranting, as my position is that to unconditionally warrant a piece of Cutlery is simply an invitation to abuse it when one gets tired of it, take it back and get another. As every one knows who has anything to do with really high grade tools of any description, the finer an article is the less abuse it will stand, and the more intelligent care it must receive in order to give the user the full value of its cost. It, therefore, looks like a joke for the American manufacturer of pocket Cutlery to pursue a ruinous business policy and then ask the Government to give him additional aid so he may succeed.

IMPORTER.

THE MARKET ON POULTRY NETTING.

To the Editor: In looking over your December 3d issue of *The Iron Age*, we notice under the head of Poultry Netting that you state that the manufacturers are taking the matter up with the jobbers, urging them to maintain the uniform price. The jobbers throughout the entire country are endeavoring at all times to get all the profit they possibly can. The writer is personally acquainted with the road, has traveled for over 25 years, and knows the conditions perfectly.

Manufacturers Selling Retailers.

Should I start out over the route to sell Poultry Netting, I will find 25 to 50 per cent. of the retail trade who are buying direct from the manufacturer. We will not state that they are buying for a lower price than we as jobbers could sell them. I personally have had interviews with several of the manufacturers' representatives who claim that for a number of years they have been selling certain retail trade. We employ a number of salesmen on the road, giving them the best price on Poultry Netting, and tell them to call on every dealer that is not a jobber. They run up against the customer who is buying from the mill direct. This customer tells them that he is buying direct from the mill, and if asked as to the amount he buys he will say possibly 10 to 50 roll lots. Our salesmen at once come to the conclusion that the manufacturer is selling the retail trade at a lower figure than we could sell. This immediately disheartens the salesman, and he concludes in his mind that the manufacturer sells the retail trade at a lower price than he can afford to do it. They come in from their trips or write in to the above effect. I personally handle these salesmen and travel as well myself, and I know this is a fact. The manufacturers should be well aware of the fact that

The Same Poultry Netting Will Be Used.

that people do not buy Poultry Netting for the purpose of eating it or feeding it to the poor or burying it; they buy Poultry Netting only when they must have it, and the jobbers would get every foot of Poultry Netting that is used if the manufacturers would do as they should and sell direct to the jobbers only. The jobber in order to meet all competition of his fellow jobbers must buy Netting in carload lots, which gives him only 2½ per cent. better price than the small buyer. He immediately must get to work to unload Netting or carry the same over the season in his warehouse, and the parties he is looking for are the buyers that will buy from 10 to 100 rolls of Netting; then he runs across the fellow who is buying from the manufacturer. This is where the price cutting starts, and not with the little fellow who buys from 5 to 10 roll lots. I personally know of two manufacturers who travel in this locality that call on the retail trade, one particularly calls on all the retail Hardware trade.

Manufacturer Is the Disorganizer.

Instead of the manufacturers finding fault with the jobber, the jobber must roll up his sleeves and pitch into the manufacturer, as he is the disorganizer, and not the jobber. Seventy-five per cent. of the jobbers are honest and will try to get the price and about 25 per cent. are dishonest in all such transactions, will rush out quickly as soon as the prices are made and offer from 3 to 5 per cent. better price in order to land the business; then it is up to the 75 per cent. of the jobbers to dispose of their stock of Poultry Netting and they are compelled to meet the price. I feel sure that if the manufacturers were to go into the large cities where the trouble originates because the jobbers there want to sell everybody, there would be no trouble with the jobbers throughout the smaller places.

When we call upon a customer who is a good, close buyer, he will state that his Hardwareman who comes from ——, has written him that he has a special price for him on Poultry Netting. This is no unusual occurrence and I consider that any inland jobber that would allow conditions of this kind to exist without getting the business is not up to date. I claim that the trouble originates with the manufacturer by his calling on any of the retail trade on Poultry Netting; he should stay away from them all. Besides, the large Hardware dealers in the cities feel as if they must have all the business and they start out and make the price. Every season we instruct our salesmen to sell goods with price guaranteed. They are not on the road more than a week until a price is made by some of the large Hardware dealers of the above cities from 3 to 5 per cent. better and we are compelled to meet the price or carry our stock of Netting.

PENNSYLVANIA JOBBER.

THE GLOBE MFG. COMPANY AND THE TAUNTON WIRE NAIL COMPANY, both of Taunton, Mass., have been consolidated into one corporation. It is stated that the change will greatly facilitate making prompt shipments of orders, although in no way interfering with the careful inspection of all goods shipped.

Vatudrip Rust Preventive.

THE Vatudrip Company, 237 Broadway, New York, has trademarked its Vatudrip liquid preparation for the prevention of rust on tools, machinery or any articles made of steel or iron, from the smallest in size to structural material. Being of a liquid character it may be used expeditiously as a dip or applied with brush or swab. The preparation will set but not harden, and when it has served its purpose may be easily removed, not injuriously affecting the surface while protecting the material regardless of where or how exposed to the elements. An important object of the preparation is to enable manufacturers and shippers to insure deliveries of products for domestic or foreign trade in first-class salable condition irrespective of moisture and dampness in any form whether in transit or warehouse. Free samples may be obtained on application to the company.

Vatudrip Rust Preventive Trademark.

New Styles of Carvers.

The Goodell Company, Antrim, N. H., and 10 Warren street, New York, has got out about 20 new patterns in carver sets in the various assortment of pieces, in addition to an already large line, which include mountings of celluloid and stag, with sterling silver bolsters.

The Johnson Lever-Fold Mower.

The Johnson Harvester Company, Batavia, N. Y., has added to its line of farm machinery a lever-fold mowing machine. This arrangement enables the operator to lift the cutting bar to a vertical position and lower it again without leaving his seat. It is thrown in and out of gear automatically as well as independently by a foot lever, and every part of the device is said to work easily and perfectly.

Wm. E. Pratt Mfg. Company.

A recently issued catalogue of the Wm. E. Pratt Company, 91 Lake street, Chicago, Ill., includes automobile jacks, farming tool brackets and emery wheel dressers, which are articles the company has lately commenced to manufacture.

Novelties for Anglers.

Abbey & Imbrie, 18 Vesey street, New York, who market all kinds of fishing tackle, have recently introduced several specialties for fishermen, one of which is the coat pocket fishing rod. It is made of hexagonal split bamboo, with nickeled mountings, reversible cork grip, fancy silk windings, has snake guides and is put up for convenient carrying in a cloth partition or compartment roll bag for valise or even for an inside coat pocket. It weighs only 6 oz. It combines a 6¾-ft. 5¼-oz. fly rod in six pieces, and a 5¾-ft. 5-oz. rod in five pieces, both with reversible butt. The joints are but 12 in. long in either. This rod is offered to satisfy a demand for a compact article, so that when for any reason, with or without baggage, an individual wishes to go fishing he need not advertise his purpose. There is also the Nichols wire frame dryer, useful when cleaning a reel and helping to preserve the line by exposing it to the air before reeling. When folded it may be instantly attached to the rod or readily carried in the pocket. It is made of nickeled brass wire and comes in diameters when extended of 9½, 13½, 18 and 24 in. Another device is an improved style of sole leather butt rest, sold without a strap, as the two slits in the upper portion permit the use of an ordinary belt, although suitable straps can be supplied if required. Still another specialty is a line of six narrow raised agate guides, somewhat different in shape. The last article in the list is a leather bound willow basket, with leather hinges to increase durability and withstand hard usage, made in five sizes of 6, 9, 12, 20 and 25 lb. capacity.

Cummins' Postage Stamp Perforators.

The B. F. Cummins Company, Ravenswood, Chicago, Ill., has put on the market, in addition to a large line of perforating machines for innumerable commercial uses, Cummins' postage stamp perforator, one of a group of five of varying capacities being here illustrated. This series of perforators is in conformity with the Post-

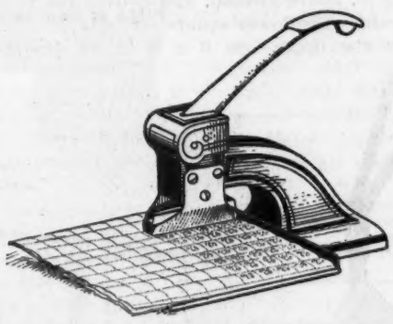


Fig. 1.—Cummins' Five-Die Postage Stamp Perforator.

master-General's ruling of May 4 last, making it lawful to perforate United States postage stamps with letters, numerals or other marks or devices for the purpose of identification, the figures here shown representing a machine of intermediate capacity, with five dies and an example of its work. The object of this procedure is to prevent the pilfering of stamps by office or other help. The machines are made in different sizes to accommodate 1, 2, 5 and 10 dies for hand operation, and there is a 10-die machine fitted with electric motor for the largest stamp users, adaptable for direct or alternating currents. The five-die machine is considered best suited for the average business house, all of the machines perforating as many as four sheets at each stroke, or 20 stamps by the five-die perforator. The stamps lie flat on a plate flush with the die and are pushed forward by the

Fig. 2.—Example of Perforation.

operator, one row at a time. There is an adjustable marginal guide for properly locating the perforation on each stamp. The handle is raised by a spring and its stroke is short and quick. The perforations made conform to the requirements of the Post Office Department —*i. e.*, holes not over 1-32 in. in diameter, total space not over ½ in. square. The base of the five-die machine is 5 x 11 in.; hight, 7 in.; length of handle, 11 in., and weight, 20 lb. There is a nickeled table for stamps, adjustable side gauge and polished brass stripper. The heavier parts are black enameled. The 10-die machine, owing to greater length of dies, is supported on both ends, partially resembling the construction of lever letter copying presses.

THE MCCARLEY HARDWARE COMPANY, Pembroke, Ky., recently incorporated with a capital of $8000, of which $6500 is paid in, has taken over the branch house of the Forbes Mfg. Company, Pembroke, which it succeeds. The lines carried include a complete line of Shelf and Heavy Hardware, Implements, Field Seeds, Woven Wire Fence, Barbed and Smooth Wire, &c. John McCarley, formerly with the Forbes Mfg. Company, Hopkinsville, Ky., is president and manager of the business.

National Fence and Post Brace.

L. F. Tissot, 582 Macon street, Brooklyn, N. Y., has just put on the market the patented fence and post brace here illustrated. Fig. 1 shows the brace itself, Fig. 2 demonstrating the method of applying it and appearance in position. It may be used to brace wood or iron fences, clothes posts or even telegraph poles by ordering a size in proportion to the service required. An important feature in the use of this form of brace is that no digging is required, merely inserting the point of anchor in the earth 6 in. from post, first removing the two braces at top by taking out the screw bolts, when the ¾-in. straight rod may be driven down 25 in., leaving about 2 in. above ground, and bolting the braces in position again. The lower square wrought iron plate is 3 x 3 in. and the upper one 6 x 6 in. in dimensions. The

Fig. 1.—National Fence and Post Brace.

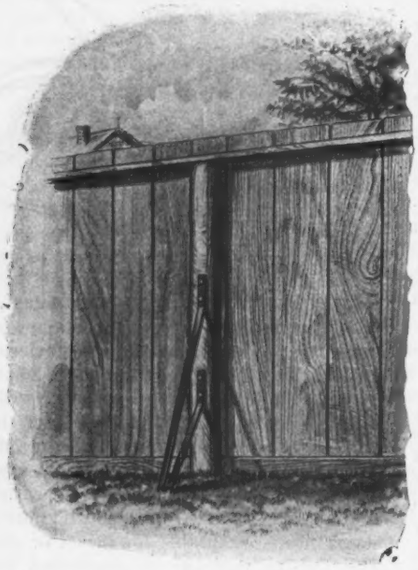
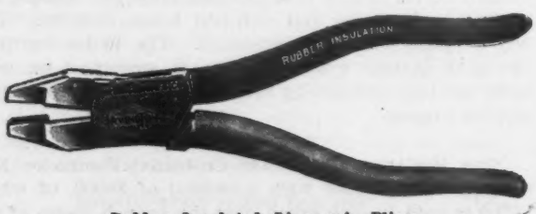


Fig. 2.—Application of Brace.

braces are ¾ x ⅜ in. and 18 and 34 in. long, respectively. The suggestion is made by the manufacturer that the braces can be advantageously used to re-establish straight lines where fences have become crooked and to make shaky fences firm, where posts in the ground have partially decayed, thus lengthening the life of fence with little labor and cost. The braces may be used on either or both sides of a fence.

Rubber Insulated Linemen's Pliers.

The Irvington Mfg. Company, Irvington, N. J., has put on the market a line of rubber insulated linemen's pliers, as here shown. They are made in 6, 7 and 8 in. sizes, of the finest tool steel, and are fully warranted. It is pointed out that the rubber insulation is a special preparation which is put on the pliers under a high pressure and that it will not chip or break off the handles when dropped long distances. It is also claimed that the insulation cannot be stripped off the handles, thus en-



Rubber Insulated Linemen's Pliers.

dangering the life of the user. The pliers are guaranteed to insulate against a comparatively high voltage and are especially adapted for use by motormen, electricians as well as linemen and others who wish to cut wires heavily charged with electricity. The pliers are made in a variety of styles and patterns, and are packed one-half dozen, of a size, in a box.

Leonard's Grand Rapids Refrigerators.

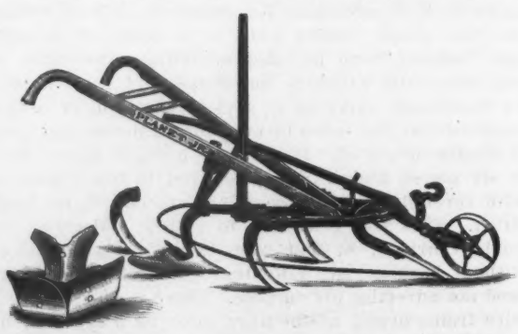
The Grand Rapids Refrigerator Company, Grand Rapids, Mich., has brought out a full line of real porcelain lined refrigerators. These are said to meet the de-

Leonard's Grand Rapids Refrigerator.

sire for a cheaper refrigerator than the Leonard cleanable, but having most of its essential features, at about the price of a common white enameled refrigerator. The case is of solid ash with rounded corners, all of the front panels being of fancy quarter sawed oak, and the entire case golden oak finish. The locks are of an improved form which transfers the pressure to the heel and avoids straining the rivet. The shelves are made of retinned wire and the linings are of real porcelain enamel on sheet steel, the same as in the Leonard cleanable refrigerators.

The Planet, Jr., Horse Hoe, Cultivator, Hiller and Vine Turner No. 10.

One of the new implements manufactured by S. L. Allen & Co., Market and Eleventh streets, Philadelphia, Pa., for the season of 1909, is the horse hoe, cultivator, hiller and vine turner shown herewith, which is lighter but stronger than the firm's regular line of horse hoes. But four teeth are used for ordinary work; three cultivator teeth, followed by a wide sweep with fingers in

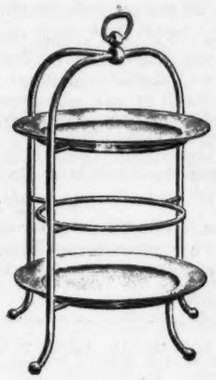


The Planet, Jr., Horse Hoe, Cultivator, Hiller and Vine Turner, No. 10.

the rear, a combination suitable for level cultivation. For hilling three extra teeth are provided, two plows and one 10-in. furrower, especially adapted to hilling crops not over 3½ ft. apart. The tool is also said to work admirably as a furrower. The new pattern of vine turner is recommended as of special value in cultivating all vine crops.

Plate Carrier.

The Searls Mfg. Company, 29 Mulberry street, Newark, N. J., Frederic Klages, New York sales agent, 127 Duane street, has brought out the plate carrier, No. 3884, here illustrated. The article is designed for the convenient and sanitary transportation of plates to the table by maid or butler, and is made for fine trade of heavy solid brass strongly braced. Its over all hight is 15 in., and it accommodates china or other plates up to 9 in. diameter, the rings on which the ware rests being 6½ in. across and affording ample space between each group. The carrier is furnished in polished or brushed brass, nickel and silver plate finishes.



Carrier for China Plates, No. 3884.

Elton Design Inside Set.

Elton Design Inside Set.

The accompanying illustration shows the new Elton design inside door set which has been added to the line of the Taylor & Boggis Foundry Company, Cleveland, Ohio. The design is made in wrought steel and wrought bronze metal, and is furnished in old copper or other finishes for cylinder and bit key front and vestibule door sets, sliding door sets, mortise latch sets, push plates, push buttons and flush sash lifts. An illustrated circular issued by the company gives details regarding all numbers in this line.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal. bbls.
Linseed, Western, Raw	.47 @48
State, Raw	.47 @48
City, Raw	.48 @49
Boiled, 1¢ ℔ gal. advance on Raw.	
Raw, Calcutta, in bbls	.70 @..
Lard, Prime, Winter	.73 @77
Extra No. 1	.51 @52
No. 1	.49 @50
Cotton-seed, Crude, f.o.b. mill	.29¾@30
Summer Yellow, prime	.38½@38¾
Summer, White	.41 @41½
Yellow Winter	.47 @48
Tallow, Acidless	.58 @59
Menhaden, Brown, Strained	.34 @35
Northern Crude	.27 @30
Southern	.23½@..
Light Strained	.34 @35
Bleached Winter	.36 @38
Ex. Bleached Winter	.38 @39

	℔ lb
Cocoanut, Ceylon	6¾@..
Cochin	7¼@ 7½
Cod, Domestic, Prime	.38 @40
Newfoundland	.40 @42
Red, Elaine	.39 @42
Saponified	6 @ 6¼
Olive, Yellow	$1.20@$1.35
Neatsfoot, Prime	.55 @58
Palm, Lagos	6 @ 6¼

Mineral Oils—

	℔ gal.
Black, 29 gravity, 25@30 cold test	.13 @13½
29 gravity, 15 cold test	.13½@14
Summer	.12½@13
Cylinder, light filtered	.20½@21
Dark, filtered	.18 @19
Paraffine, 903-907 sp. gravity	.14½@15
903 sp. gravity	.13½@14
883 sp. gravity	.11 @11½
Red	.13½@14

Miscellaneous—

	℔
Barytes:	
White, Foreign	ton $18.50@20.50
Amer., floated	ton 17.00@18.00
Off color	ton 12.50@15.00
Chalk, in bulk	ton 3.00@ 3.40
China Clay, Imported	ton 11.50@18.00
Cobalt, Oxide	100 lb 1.45@ 2.40
Whiting, Commercial	100 lb 42@52
Gilders	100 lb .55@ .60
Ex. Gilders	100 lb .60@ .65

Putty, Commercial—℔ 100 lb

In bladders	$1.70 @1.80
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—℔ gal.

In Oil bbls	.42 @42½
In machine bbls	.42½@43

Glue—

	℔ lb
Cabinet	.12 @15
Common Bone	.7½@ 9
Extra White	.18 @24
Fish, liquid, 50 gal. bbls., per gallon	.60 @1.20
Foot Stock, White	.12 @14
Foot Stock, Brown	.9 @11
German Common Hide	.10 @12
German Hide	.12 @18
French	.10 @40
Irish	.13 @16
Low Grade	.10 @12
Medium White	.14 @17

Gum Shellac—

	℔ lb
Bleached, Commercial	.21 @22
Bone Dry	.25 @26
Button	.30 @40
Diamond I	@39
Fine, Orange	.30 @35
A. C. Garnet	.22½@23
G. A. L.	.20 @21
Kala Button	.15½@16
D. O.	@41
Octagon B	.34½@35
T. N.	.21 @22
V. S. O.	@39

Colors in Oil—

	℔ lb
Black, Lampblack	.12 @14
Blue, Chinese	.36 @46
Blue, Prussian	.32 @36
Blue, Ultramarine	.13 @16
Brown, Vandyke	.11 @14
Green, Chrome	.12 @16
Green, Paris	@24
Sienna, Raw	.12 @15
Sienna, Burnt	.12 @15
Umber, Raw	.11 @14
Umber, Burnt	.11 @14

White and Red, Lead &c.—

	℔ lb
Lead, English white, in Oil	.10¼@10¾
Lead, American White:	
Dry and in Oil, 100, 250 and 500 lb kegs	6¾
Dry and in Oil, 25 and 50 lb kegs	7
Dry and in Oil, 12½ lb kegs	7¼
In Oil, 25 lb tin pails	7¼
In Oil, 12½ lb tin pails	7¾
In Oil, 1, 2, 3 and 5 lb tin cans, ass't	8¾
Red Lead and Litharge:	
In 100 lb kegs	7
In 25 and 50 lb kegs	7¼
In 12½ lb kegs	7½
In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge.	

Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.

Zinc, Dry—

	℔ lb
American, dry	.5¼@ 5⅝
Red Seal (French process)	.6¾@ 7
Green Seal	.7¼@ 7½
German Red Seal (French process)	.7 @7¼
Green Seal	.7¼@ 7⅝
White Seal	.8¼@ 9
French, Red Seal	.8⅝@ 8¾
Green Seal	.10⅝@10¾

Dry Colors—

	℔ lb
Black, Carbon	.6¼@10
Black Drop, American	.3½@ 8
Black Drop, English	.5 @15
Black, Ivory	.16 @20
Lamp, commercial	.4 @ 6
Blue, Celestial	.4 @ 6
Blue, Chinese	.30 @33
Blue, Prussian	.28 @30
Blue, Ultramarine	.3½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3 10@3 25
Green, Chrome, ordinary	.3½@ 5
Green, Chrome, pure	.17 @25
Ocher, American	ton $8.50@16.00
American Golden	.2¼@ 3¼
French	.1¼@ 2
Foreign Golden	.3 @ 4
Orange Mineral, English	.10 @12
French	.12¾@13
German	.12 @13
American	.9 @10
Red, Indian, English	.4½@ 6
American	.3 @ 3¼
Red, Turkey, English	.4 @10
Red, Tuscan, English	.7 @10
Red, Venetian, Amer.	100 lb $0.50@1.25
English	100 lb $1.15@1.50
Sienna, Italian, Burnt and Powdered	.3 @ 9
Italian, Raw, Powdered	.3 @ 7
American, Raw	.1½@ 2
American Burnt and Pow'd	.1½@ 2
Talc, French	ton $18.00@25.00
American	ton 15.00@25.00
Terra Alba, French	100 lb .90@ 1.00
English	100 lb .80@ 1.00
American	100 lb, No. 1. .75@ .80
American	100 lb, No. 2. .60@ .65
Umber, T'key, Bnt, & Pow.	.2¾@ 3
Turkey, Raw and Powdered	.2¾@ 3
Burnt, American	.1¼@ 2
Raw, American	.1¼@ 2
Yellow, Chrome, Pure	.12¾@15
Vermilion, American Lead	.7 @25
Quicksilver, bulk	.65 @..
Quicksilver, bags	@68
English, Imported	@70
Chinese	$0.90@1.00

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic....33⅓%
North's....10%
Upson's Patent, ℔ gro., $29.90....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent....10%
Ives' Stop Bead Screws and Washers....10%
Taplin's Perfection....10%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.90; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs....$2.00@$3.00

Anvils—American—

Eagle Anvils....℔ lb @8 ¢
Hay-Budden, Wrought....9½@9¾ ¢
Trenton....℔ lb 9½@9¾ ¢

Imported—

Swedish Solid Steel Paragon, ℔ lb....10@10½ ¢
Swedish Solid Steel Sisco, Superior, ℔ lb....10@10½ ¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

Anvil, Vice and Drill—

Millers Falls Co., $18.00....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Livingston Nail Co....10%

Augers and Bits—

Com. Double Spur....75&10@80%
Jennings' Patn., Bright.65&10@70%
Black Lip or Blued...65@6o&5%
Boring Mach. Augers....70%
Car Bits, 12-in. twist....40&10%
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's....35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....20%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Swan's....65&10@70%
Swan's, Jennings' Pattern....50%
Wright's Jennings' Bits....50%

Bit Stock Drills—

See *Drills, Twist.*

Expansive Bits—

Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $36.00....60&10%
Swan's....60%

Gimlet Bits—

Per gro.
Common Dbl. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—

Bonney Pat., per doz..$5.50@6.00
Ames....20&10%
Universal....20%

Ship Augers and Bits—

Ship Augers....40&10@—%
Ford's....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's....6%
Watrous'....33⅓&7½%
Snell's....60%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—

Brad Awls:
Handled....gro. $2.75@3.00
Unhdld, Shldered...gro.65@65¢
Unhandled, Patent..gro.60&70¢
Peg Awls:
Unhandled, Patent..gro. 31@31¢
Unhdld, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $1.50@4.00
Handled, Sockt..gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

Single Bit, base weights: Per doz.
First Quality....$4.75@5.00
Second Quality....$4.25@4.50
Double Bit, base weights:
First Quality....$7.00@7.50
Second Quality....$6.50@6.75

Axle Grease—

See *Grease, Axle.*

Axles—Iron or Steel.

Concord, Loose Collar...4¼@4½¢
Concord, Solid Collar....4½@5 ¢
No. 1 Common, Loose...3½@4 ¢
No. 1½ Com., New Style..4¼@4¾¢
No. 2 Solid Collar....4¼@4¾¢
Half Patent:
Nos. 7, 8, 11 and 12....70%
Nos. 13 to 14....70%
Nos. 15 to 18...70&10@70&10&5%
Nos. 19 to 22...70&10@70&10&5%

Boxes, Axles—

Common and Concord, not turned....lb., 5@6¢
Common and Concord, turned, lb., 6@7¢
Half Patent....lb., 9½@10¢

Bait—Fishing—

Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

Balances—Sash—

Caldwell new list....50&10%
Pullman....50&10%

Spring—

Light Spring Balances..60@60&5%
Chatillon's:
Light Spg. Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢

Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beam, Scale—

Scale Beams....40%
Chattillon's No. 1....30%
Chatillon's No. 2....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned....$1.20
No. 10 Wire Tinned....℔ doz. $1.50

Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.60; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.35; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

Bellows—

Blacksmith, Standard List:
Split Leather....60&10@65%
Grain Leather....50@50&10%

Hand— *Net Prices*

Inch..	6	7	8	9	10
Doz..	$5.00	5.50	6.00	6.50	7.50

Molders—

Inch..	10	12	14	16
Doz..	$7.50	9.00	12.00	15.00

Bells—Cow—

Wrought Cow Bells....75%
Jersey....75&10%
Texas Star....50%

Door—

Home, R. & F. Mfg. Co.'s....55&10%

Hand—

Polished, Brass....60@60&10%
White Metal....60@60&10%
Nickel Plated....50&10%
Swiss....50&10%
Cone's Globe Hand Bells....33⅓@35%

Miscellaneous—

Farm Bells....lb., 2¼@2½¢
Church and School....60@60&10%

Belting—Leather—

First Quality, Ex. Hy., Strictly Short Lap....60&10%
Standard....70&10@70&10&5%
Light Double....75&10%
Cut Leather Lacing....45@50%
Leather Lacing Sides, per sq. ft.25¢

Rubber—

Competition (Low Grade), 70&10@75%
Standard....60&10@70%
Best Grades....40@50%

Bench Stops—

See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters....20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes....50%
Tubes....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks Tackle—

Common Wooden....75@75&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior....30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined....55%
Embossed....55%

Boards, Wash—

See *Washboards.*

Bobs, Plumb—

Keuffel & Esser Co....33⅓&10%

Bolts

Carriage, Machine, &c,—

Common Carriage (cut thread): ⅜ x 6 and smaller....75&5% Larger and longer....70&5%
Common Carriage (rolled thread): ⅜ x 6, smaller and shorter, 75&10&5%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends, with C. & T. Nuts, 70&10%
Machine (Cut Thread): ¾ x 4 and smaller....75&10% Larger and longer....70&10%

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knobs:

Inch	3	4	5	6	8
Per doz..	$0.30	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:

Inch	6	8	10
Per doz.....	$1.20	1.50	2.25

Cast Iron Chain, Flat, Japanned:

Inch	6	8	10
Per doz.....	$1.00	1.40	1.65

Cast Iron Flat Shutter, Jap'd, Brass Knobs:

Inch	6	8	10
Per doz.....	$0.75	.95	1.25

Wrought Barrel Japanned, 60&10@80&10&5%
Barrel Bronzed....60&10%
Spring....70&10@70&10&10%
Shutter....60&5@50&10&5%
Square Neck....75@75&10%
Square....70&10&10@80%
Ives' Mortise....10%
Ives' Wrought Metal....10%

Expansion—

F. H. Evans' Crescent....40@40%
Richards Mfg. Co....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double....60%
Style No. 1, Single....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw....66⅔%

Plow and Stove—

Plow....65&5@70%
Stove....85@85&5%

Tire—

Common Iron....80%
Norway Iron....80%
American Screw Co.:
Norway Phila., list Oct. 16, '84..80%
Eagle Phila., list Oct. 16, '84..62½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84..80%
Eagle Phila., list Oct. 16, '84..82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84....80%
Eagle....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99...80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½%

Borers, Bung—

Borers Bung, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz...	$4.80	5.60	6.40	8.00
Inch.....		2¼		2½
Per doz.....		$8.65		11.50

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

Boxes, Mitre—

C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme....15&10%
Perfection....40%
Seavey....45%

Braces—

Comman Ball, American....$1.50
Barber's....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 61, 166, 206, 614....50%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat....60&10%

Brackets—

Wrought Steel....75&10&5@80%
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket....℔ doz. $1.50

Bright Wire Goods—

See *Wire and Wire Goods.*

Broilers—

Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

Buckets, Galvanized—

M'fr's list, price per gross.

	Quart..	10	12	14
Water, Reg...		26.85	29.50	33.50
Water, Hvy...		45.35	48.00	52.00
Fire, Rd. Btm.		32.00	34.65	38.65
Well.....		37.35	41.35	45.35

10&7½&5&5%

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought, High List, Oct.26,'06.65%
Cast Brass, Tiebout's....40&10%

Cast Iron—

Fast Joint, Broad....40&10@50%
Fast Joint, Narrow....40&10@50%
Loose Joint....70&10@75%
Loose Pin....70&10@75%
Mayer's Hinges....70@70&5
Parliament Butts....70@70&5

Wrought Steel—Bright.

Light Narrow, Light Reversible....70&5%
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c....70%
Back Flaps, Table Chest..65%

Japanned.

Light Narrow, Loose Pin. 40&5%
Light Narrow, Ball Tip..60%
Broad....40&5%
Steeple Tipped....70%
Ball Tipped....70%

Extra, ⅜ ●

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.....30%
Hendryx Enameled.....35%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong, per 100 lb., $3.50@$3.85
Sharp, 1 prong, per 100 lb., $4.00@$4.35
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel.....4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B......52@55¢
G. D......*per M* 34@35¢
F. L......*per M* 40@48¢
G. E......*per M*. 48@50¢
Musket.....*per M* 62@63¢

Primers—

Berdan Primers, $2 per M..20&5%
Primer Shells and Bullets..15&10%
All other primers per M. $1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball.....$1.40
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets..15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed.....65&10@70%
Plate.....60@60&5%
Philadelphia.....70&10@75%
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

3-16	¼	5-16	⅜	½	⅝
$7.70	5.10	4.15	3.50	3.30	3.10

¾-⅞-1 1⅛ to 1¼ inch.
$3.00 3.10
In cask lots, deduct 25¢.
German Coil.....70%
German Pattern Coil:
6-0 to 1.....70&10&5%
2 and 3.....60&10&10@70%
4, 5 and 6.....50&10@50&10&5%

Halter—

Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 24, '97....60&10&5@70%
Covert Mfg. Co.:
Halter .....35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring..$28.00
6½—6-2, Straight, with ring..$29.00
6½—8-2, Straight, with ring..$32.00
6½—10-2, Str'ght, with ring..$37.00
NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c...60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60&10&5@60&10&10%
Brass.....65%
Safety and Plumbers' Chain..75%
Gal. Pump Chain....lb., 4½@5%
Bridgeport Chain Co.:
Triumph Halter and Coil..35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain....70%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

Chalk—

Carpenters' Blue.....*gro.*, 50¢
Carpenters' Red.....*gro.*, 50¢
Carpenters' White.....*gro.*, 40¢

Checks, Door—

Bardsley's 45%
Pullman, per gro.....$54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

Chisels—Socket Framing and Firmer

Standard List.....80&10@—%
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

Tanged—

Tanged Firmers.....30&5@35%
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co.....25&5%

Cold—

	lb.
Cold Chisels, good quality	.13@15¢
Cold Chisels, fair quality	.11@12¢
Cold Chisels, ordinary	.... 9@10¢

Chucks—

Almond Drill Chucks.....33%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00.....35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Lathe Chucks:
Independent 35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws 25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive.....40%
Planer Chucks.....20%
Standard 45%
Drill Press Vises.....30%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 25, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%
Whitaker Mfg. Co.:
National Drill.....25%

Clamps—

Carriage Makers', Star, P., S. & W. Co. 50%
Besly, Parallel.....33⅓&10%
Hammer & Co.:
Adjustable .....20&5%
Carriage Makers' H. P. Screw.40&5%
Myers' Hay Rack.....50%
Lineman's Swedish Neverturn.....65%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary.....40%

Sidewalk—

American Fork & Hoe Co.:
Star, ℔ doz., Socket, $4.00; Shank $3.50
Shank, ℔ doz., X 7½, $3.50; Shank, X 8.....$3.75

Cleavers, Butchers'—

Foster Bros.....30%
Fayette R. Plumb.....30%
L. & I. J. White Co.....30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each..$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Roll Bearing Horse, each....$8.75
Stewart's New Model Sheep Shearing Machine, each.$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

Clips, Axle—

Regular Styles, list July 1, '05, 80&80&10%

Cloth and Netting, wire—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c 75%
Compression Bibbs.....70%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods.....70&10@75%

Conductor Pipe,—

L. C. L. to Dealers:

	Gal. Steel.	*Charcoal.*	*Copper.*
Northeastern:			
	70&10%	50&10&7½%	50&10%
Eastern:			
	70&10&5%	50&10&7½%	50&10%
Central:			
	75&5%	60%	50&10%
Northwestern:			
	75&2½%	60%	50&10%
Western:			
	70&7½%	50&12½%	50&5%
Tennessee:			
	70&10%	50&12½%	50&10%
Southern:			
	70%	50&12½%	50&5%
Southwestern:			
	70%	50&5%	50&5%

Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90

Galvanized, Lined, side handles,

Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled.....10%
Agate Lined.....10%

Coppers' Tools—

See *Tools, Coopers'.*

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair and heavier, 21½¢; lighter than 3 lb. to pair.....23½¢

Cord—Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 22¢; No. 7, 22½¢; No. 6, 23½¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18..37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....lb., 11@11½¢
Cotton Sash Cord, Tw'ted..18@20¢
Patent Russia.....lb....20¢
Cable Laid Russia.....lb...21¢
India Hemp, Br'd'd.....lb...21¢
India Hemp, Twisted...lb..13@14¢
Patent India, Twisted..lb...17¢
Pearl Braided, cotton, No. 6, ℔ lb, 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19¼¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab...℔ lb 45¢
} 15%
Phoenix, White, Nos 8 to 12....27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

Full Length.....90@—%
Short Length.....90&20@—%
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord 90%

Cradles—

Grain.....50%

Crayons—

White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ⅛ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

Crooks, Shepperds'—

American Fork & Hoe Co.:
Montana .....℔ doz. $4.50

Crow Bars—See *Bars, Crow.*

Cultivators—

American Fork & Hoe Co.:
Victor Garden.....50&10%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....60%
B. Mfg. Co.....40%
Woodward 50%

Meat and Food—

American 30%

Nos.	401	402	403	404	405	406	407
Each	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32	
Each	$2	$3	$2.75	$4.50	$6	25@25&7½%

No. 202, $1.50.....40&7½%
P. S. & W. Co.:
Ideal .....40@40&5%
Hales .....60&5%
Little Giant.....℔ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$63.00

New Triumph No. 605, ℔ doz. $24.00, 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $12.00.....45&10&10%
$15.00 $18.00
Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

Tobacco—

All Iron, Cheap...*doz, $4.25@4.50*
Enterprise .....25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 .....40%

Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger 40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.50
Split Handle Post Hole Diggers, ℔ doz., $7.50
Hercules Pattern, ℔ doz.....$9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers 60%

Dividers—See *Compasses.*

Drawing Knives—

See *Knives, Drawing.*

Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmith's Common Drilling Machines.....$1.50@1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....33⅓%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved .....40@40&5%
Ratchet, No. 012.....40@40&5%
Ratchet, Celebrated.....40@40&5%
Ratchet, Whitney's, P., S. & W. .....40&10@50%
Whitney's Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....70@70&5%
Taper and Straight Shank, 60&10@70%

Drivers, Screw—

Screw Driver Bits, per doz...45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....50%
Buck Bros.' Screw Driver Bits.....30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 60%; No. 7540, 40&10%

Eave Trough, Galvanized—

Territory.	*Gal. Steel.*	*Copper.*
Northeastern	..75&10&5%	50&10%
Eastern	..80%	50&10%
Central	..80&10&5%	50&10%
Northwestern	..80&10&5%	50&10%
Western	..80&5%	50&5%
Tennessee	..60&5%	50&10%
Southern	..75&10%	50&5%
Southwestern	..75&10&2½%	50&5%

Terms.—2% for cash. Factory shipments generally delivered.
Note.—Lower prices are made in some sections.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.
Sizes 2, 3, 4.....80%
Sizes 1½, 2½, 3½, 5, 6...60&10%
No. 26.....50%
No. 24.....25%
Copper Elbows.....50%

Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, Flat Crimp..40&10&5%

Emery, Turkish—

	¼ to 46:	5½ to 220:	Flour.
Kegs	lb. 5¢	5½¢	3½¢
½ Kegs.....	lb. 5½¢	5¾¢	3¾¢
¼ Kegs.....	lb. 5½¢	6¢	4¢

10-lb. cans, 10 in case....6¼¢ 7 ¢ 6 ¢
10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢
Less quantity..10 ¢ 10 ¢ 8 ¢
NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's 50%
Upson's Patent.....40%

Cord and Weight—
Ives, ₩ gro., $1.08.....10%
Titan, ₩ gro., $0.66.....10%

Corrugated—
Acme Corrugated Fasteners.....70%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined, ..60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₩ doz., $36.00.....40&10%
Lane's, ₩ doz., $36.00.....40&10%
National Measuring, ₩ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands....75&10@80%
Lower Grade...75&10&10@80&10%
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33⅓@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.60*	*3.85*	*4.15*	*4.65*

Peck, Stow & Wilcox Co.:

In.	15	17	19	21	24
	$4.00	4.40	4.75	5.50	6.50

....30%
Reading Hardware Co.....60%

Fodder Squeezers—
See *Compressors.*

Forks—
American Fork & Hoe Co.:
owa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-tine.....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5%
Champion, Hay.....60&12½%
Acme, Hay.....60&20%
Manure, Regular, 4-tine.....65&5%
Manure, Regular, 5 and 6 tine...70%
Champion, Manure.....65&5%
Columbia, Manure.....70%
Acme, 4-tine.....60&10&5%
Round Shoulder Header, 4-tine..65%
Champion, Header.....65%
Dakota, Header.....65%
Kansas Header.....65%
Wood, Barley.....35&5%
Steel, Barley.....66%
Columbia, Spading.....70&7½&5%

Frames— Wood Saw—
White, S'g't Bar, per doz..75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.....	*1*	*2*	*3*	*4*	*6*
Each....	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp	*$2.75*
Cotton	*3.20*
Waterproof Sgl. Taped..	*3.65*
Waterproof Dbl. Taped..	*4.40*
Waterproof Tpl. Taped..	*5.15*

} 20%

Gates, Molasses and Oil—
Stebbins' Pattern.....80@80&5%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush, 25&10@50%
Elwell's 40%

Grease, Axle—
Common Grade...gro.$6.00@$6.50
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₩ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones. ₩ inch, ₩ doz., $2.00.....23½%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....65@65&10%
Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@50%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' 50%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₩ gro....$7.75

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢...80&10&10%
Over 5 lb., per lb., 30¢.....
Over 5 lb., per lb., 30¢..80&10&10%

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins' 40%
Champion 50%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro.$3.00@$3.50
Brad Awl.....gro.$1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro.$1.30@$1.40
Hammer, Hatchet, &c., 60&10@60&10&5%
Hand Saw, Varnished, doz., 80¢ 85¢; Not Varnished.....65@75¢
Plane Handles:
Jack, doz., 30¢; Fore, doz...45¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle, ₩ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₩ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:
Hammer, ₩ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₩ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₩ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₩ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₩ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ₩ doz., 12 to 14 in., $2.00.
} 50%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track...50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ₩ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction 60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B, D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B, D, No. 20.....50&10%
Trolley B, D, No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door R. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₩ doz., 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

Extra 5&10% often given.

Hangers— Garment—
Pullman Trouser, ₩ gro. No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₩ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ₩ doz. net 50%

Joist and Timber—
Lane Bros. Co.....35%

Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ₩ doz..60%

Hatchets—
Regular list, first qual.40&12½%—
Second quality.....50&10&5%—

Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₩ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.
Mortise Shutter.....80%
Mortise Reversible Shutter..80%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70&75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₩ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L'v'chs.	*$2.00*	*2.70*	*5.00*
Hinges only.....	*1.25*	*1.90*	*3.50*
Latches only.....	*.70*	*.75*	*.35*

New England:
With Latch.....doz..@$2.00
Without Latch.....doz..@$1.60
Reversible Self-Closing:
With Latch.....doz..@$1.75
Without Latch...doz....@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz..$1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₩ doz. prs.....$1.00

Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing 40%
Lawson Mfg. Co. Matchless.....30%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, C'st Iron$6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing 40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₩ gro, $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House...25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ₩ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₩ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro. $12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₩ gr. $9.00
Chief Ball Bearings Floor Hinge 50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₩ gr, pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
Spring Hinges.....33⅓%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list February 10, 1908:
Light Strap Hinges..50&10%
Heavy Strap Hinges..60&5%
Light T Hinges.....50%
Heavy T Hinges.....40%
Extra Hvy. T Hinges.50&10%
Hinge Hasps.....33⅓%
Cor. Heavy Strap....60&5%
Cor. Ex. Heavy T...50&10%
Screw Hook and Strap. { *6 to 12 in..lb. 3½¢* / *1½ to 20 in..lb. 3¼¢* / *22 to 36 in..lb. 3 ¢*
Screw Hook and Eye:
⅜ to 1 inch.....lb. 6¼¢
⅝-inch .....lb. 7½¢
½-inch .....lb. 8½¢

Extra 10&7½&5%.

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross:

Inch	*15*	*16*	*17*	*18*
Galv. Open....	*$35*	*$39*	*$43*	*$46*
Jap. Open...	*26*	*28*	*31*	*35*
Galv. Funnel...	*49*	*48*	*52*	*56*
Jap. Funnel....	*33*	*36*	*59*	*43*

Extra 10&7½&5%

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye-

Scovil and Oval Pattern, 60&10@60&10&10%
Grub, list Feb. 23, 1899, 70&10@70&10&10%
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern)....60&5%

Handled—

Cronk's Weeding, No. 1,$2.00; No. 2,$2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70%
Mattock, Junior....70%
Sprouting....50%
Tobacco, Harper's....66⅔&15&10%
Warren....55&10&10&5%
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ℔ doz. $24.00....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze....25%
Empire....50%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....33⅓%

File and Tool—

Nicholson File Holders and File Handles....33⅓&40%

Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $18.00; ℔ doz....$2.00

Trace and Rein—

Fernald Double Trace Holder, ℔ doz. pairs....$1.25
Dash Rein Holder, ℔ doz....$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

Wire—

Belt, Nos. 1 to 15....75&10@80%
Wire C. & H. Hooks..80@80&10%
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

Wrought Iron—

Box, 6 in., per doz., $0.90; 8 in., $1.15.
Cotton....doz. $1.25@$1.50
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz., $2.75@$3.00
Grass, common grades, all sizes, per doz....$1.25@$1.50
Whiffletree....lb. 5¾@6¢
Hooks and Eyes:
Brass....60@60&10%
Malleable Iron....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition....ft. 6@6¼¢
3-ply Guaranteed....ft. 8½@9¢
4-ply Guaranteed....ft. 9½@12¢
Cotton Garden, ¾-in., coupled:
Low Grade....ft. 8@ 9c
Fair Quality....ft. 10@11¢

Irons— Sad—

From 4 to 10....lb. 2½@2¾¢
B. B. Sad Irons....lb. 3¼@3½¢
Mrs. Potts', cents per set:

	Nos. 50	55	60	65
Jap'd Caps	86	93	96	93
Tin'd Caps	91	88	1.01	98

New England Pressing..lb. 3¾@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner....60%

Pinking—

Pinking Irons....doz. 60@85¢

Irons, Soldering

See *Coppers.*

Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw....30&2%; Steel, 45%
Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

Ladder—

Richards Mfg. Co., Ladder Jacks..50%

Jointers—

Pike Mfg. Co., Saw Jointers, $7.00..40%

Kettles—

Brass, Spun, Plain....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ℔ doz., No. 10 C H..$2.10
Easy Cut, ℔ doz., No. 10 B C H..$2.20
Acme, ℔ doz....$2.35
Dent, ℔ doz....$2.35
Adjustable, Serrated, ℔ doz....$1.90
Serrated, ℔ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

Drawing—

Standard List....80&10@—%
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

Hay and Straw—

Serrated Edge, per doz. $5.00@5.50
Iwan's Sickle Edge....℔ doz. $9.50
Iwan's Serrated....℔ doz. $10.00

Miscellaneous—

Farriers'....doz. $2.60@3.55
Wostenholm's....℔ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40
Carriage, Jap., Drive, all sizes, gro. 35@40¢
Door, Mineral....doz. 65@70¢
Door, Por. Jap'd....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c. 15%

Lacing, Leather—

See *Belting, Leather*

Ladders, Store, &c.—

Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

Ladles, Melting—

L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

Lamps,—

Hammer's M. I. Hand....45%

Lanterns—Tubular—

Regular, No. 0....doz. $4.35@4.50
Side Lift, No. 0....doz. $4.60@4.75
Hinge Globe, No. 0. doz. $4.60@4.75
Other Styles....40@40&10%

Bull's Eye Police—

3-inch....$3.75@4.00

Latches— Thumb—

Roggin's Latches, Jap'd, with Screws....doz. 35@40¢

Door—

Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.50

Leaders, Cattle—

Small....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.30*	*1.95*	*1.75*
75 feet	*1.95*	*1.65*	*1.50*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....℔ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—

Cabinet Locks....33⅓@33⅓@5%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

Sash, &c.—

Ives' Patent:
Crescent....10%
Automatic Gravity Metal Sash, ℔ gro., $149.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ℔ doz....$0.75@$1.00

Machines—Boring—

Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

Corking—

Reisinger Invincible Hand Power... ℔ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist,30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

Ice Cutting—

Chandler's....12½%

Washing

Boss Washing Machine Co.: Per doz.
Boss No. 1....$57.00
Boss Rotary....$57.00
Champion Rotary Banner No. 1..$57.00
Standard Champion No. 1....$50.00
Standard Perfection....$27.00
Cincinnati Square Western....$33.00
Uneeda American, Round....$33.60

Mallets—

Hickory....45&5@50%
Lignumvitæ....45&5@50%
Tinners' Hickory and Applewood....doz. 45&5@50%

Mangers, Stable—

Swett Iron Works....50%

Mats, Door—

Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list,50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

Motors, Water—

Divine's Red Devil....30%

$2.50	3.50	10.00	15.00	33⅓%
No. 1.	2	3	4	

Lippincott's:

No....	1	2	3	4	
	$2.50	3.50	10.00	15.00	33⅓%

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest, 10-in., $2.00; advance 10¢ for each size.
Cheap, 10-in., $2.25; advance 15@20¢ for each size.
Better Grade, 10-in., $3.00; advance 25¢ for each size.

	12	*14*	*16*	*18-in.*
High Grade...	*$4.50*	*4.75*	*5.00*	*5.25*

Continental....60%
Great American....70%
Great American Ball B'r'g, new list.70%
Quaker City....70%
Pennsylvania....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf....50%
Pennsylvania Horse....33⅓&5%
Pennsylvania Pony....40&5%

Nails—

Wire Nails and Brads, Miscellaneous....85&5@85&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	.. ℔ lb. net, 12¢
Coleman	13	12	12	11	11	net ℔ lb
New Haven..	23	21	20	19	18	.. ℔ lb. net, 12¢
Livingston	19	18	17	16	16	....10%
Western						℔ lb 8½¢

Jobbers' Special Brands, per lb. 9¢

Picture—

	1½	2	2¼	3 in.
Brass Hd, gro.	*.45*	*.55*	*.60*	*.70*
Por. Head, gro.	*1.10*	*1.10*	*1.10*	

Upholsters—

Brass....30%
Plated....30&10%

Nippers—

See *Pliers and Nippers.*

Nipples—

Standard Nipple Co.:
Wrought Pipe Nipples....80%

Nuts— *Blank or Tapped.*

Cold Punched:	*Off list.*
Square	*5.30¢*
Hexagon	*5.90¢*
Square, C., T. & R.	*5.70¢*
Hexagon, C., T. & R.	*6.50¢*
Hot Pressed:	Off list.
Square	*5.80¢*
Hexagon	*6.30¢*

Oakum—

Best....lb. 6½¢
U. S. Navy....lb. 6 ¢
Navy....lb. 5 ¢
Plumbers' Spun Oakum..3¾@3 ¢

Oil—

Pike Mfg. Co., Stonoil....40%

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated....75&10%
Chase or Paragon:
Brass and Copper....50&10%
Zinc....65&10@70%
Railroad....60&10&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

Openers—Packing Box—

Herculever, ℔ doz., $24....30%

Can Openers—

Per doz.
Sprague, Iron Handle....30@35¢
Sprague, Wood Handle....40¢
Sardine Scissors....$1.75@3.00
Can and Bottle Openers, ℔ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

Egg—

Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing, Wick and Rope, any quantity....18@20¢

Rubber—

(Fair quality goods.)
Sheet, C. I....11@12¢
Sheet, C. O. S....11@12¢
Sheet, C. B. S....12@13¢
Sheet, Pure Gum....40@45¢
Sheet, Red....40@50¢
Jenkins' '96, ℔ lb, 80¢....25%

Miscellaneous—

American Packing....lb. 7@10 ¢
Cotton Packing....lb. 16@25 ¢
Italian Packing....lb. 9@10¢
Jute....lb. 4@4¼¢
Russia Packing....lb. 9@10¢

Pails, Water, Well, &c.—

See *Buckets.*

Paint—

Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

Pans— Dripping—

Standard List....75%
Edwards, Royal Blue....75%

Fry—

Common Lipped:

Nos....	*1*	*2*	*3*	*4*	*5*
Per doz....	*$0.75*	*0.85*	*0.95*	*1.15*	*1.30*

Refrigerator, Galva.—

Inch....	*12*	*14*	*16*	*18*
Per doz....	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos: lb.
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft..2½¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft....3½¢
Mill Board, Sheet, 40 x 40 in., 1-32 to ⅛ in....3¢
Per roll.
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll, $4@$4.58¢
Medium weight, 30 lbs. to roll, $5@$5.70¢
Heavy weight, 40 lbs. to roll, 75@78¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton....$54.50
Red Rope Roofing, 250 sq. ft. per roll....$1.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton, $34.00@$38.00
2 ply, roll 108 sq. ft....65¢
3 ply, roll 108 sq. ft....88¢
Slater's Felt (roll 500 sq. ft.).80¢

Sand Paper and Cloth—

Flint and Emery....50&10%
Garnet Paper and Cloth....25%

Parers—Apple—

Goodell Co.:
Family Bay State....℔ doz. $15.00
Improved Bay State....℔ doz. $36.00
New Lightning....℔ doz. $7.00
Turn Table '98....℔ doz. $6.00
White Mountain....℔ doz. $5.00
Bonanza Improved....each $7.50
Dandy....each $10.00
Eureka Improved....each $20.00
New Century....each $20.00
Ranger....each $30.00

Livingston Nail Co.:
Daisy ..... ℔ doz. $4.00
Little Star ..... ℔ doz. $5.00
Rocking Table ..... ℔ doz. $6.20
Reading Hardware Co.:
Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Reading 72 ..... ℔ doz. $5.25
Reading 78 ..... ℔ doz. $6.25

Orange—

Goodell Co., Success ..... each $20.00

Potato—

Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

Picks and Mattocks—

(List Jan., 1908.)

List ..... 75&10%
Cronk's Handled Garden Mattock, ℔ doz., $3.00 ..... 33⅓%

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass ..... 50@50&10%
Iron, list Nov. 11, '85 .. 60@60&10%

Pipe, Cast Iron Soil—

Standard, 2-6 in. ..... 70&10%
Extra Heavy, 2-6 in. .. 75&10@80%
Fittings, Standard and Heavy, 80&10@85%

Pipe, Merchant—

Carloads to Consumers:

	Steel. Blk.	Steel. Galv.	Iron. Blk.	Iron. Galv.
	%	%	%	%
⅛ and ¼ in.	66	50	64	..
⅜ in.	68	54	66	52
½ in.	70	58	68	56
¾ to 6 in.	74	64	72	62
7 to 12 in.	71	56	69	54

Pipe, Vitrified Sewer—

Carload lots.

Standard Pipe and Fittings, 8 to 24 in., f.o.b. factory:
First-class 87%
Second-class 90%

Pipe, Stove—

	Per 100 joints. C. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue	$6.25	$7.25
6 in., Standard Blue	6.75	7.75
7 in., Standard Blue	7.75	8.75
5 in., Royal Blue	7.00	8.00
6 in., Royal Blue	7.50	8.50
7 in., Royal Blue	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color	$5.90	$6.90
6 in., Uniform Color	6.40	7.40
7 in., Uniform Color	7.40	8.40

Planes and Plane Irons—

Wood Planes—

Bench, first qual. ..... 50@30&10%
Bench, second qual. ... 40@40&10%
Molding ..... 25@25&10%
Chapin-Stephens Co.:
Bench, First Quality 30%
Bench, Second Quality 40%
Molding and Miscellaneous 25%
Toy and German 30%
Union 60%

Iron Planes—

Chaplin's Iron Planes 60%
Union 60%

Plane Irons—

Wood Bench Plane Irons, list Dec. 12, '06 ..... 25%
Buck Bros. 30%
Chapin-Stephens Co. 25%
Union 50%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse ..... ℔ doz. $7.50

Plates—

Felloe ..... lb. 3¾@4¢
Avery Stamping Co.:
Standard Wrot, Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¼-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

Steel Pipe Hook—

Never-Break ..... 75&10%

Pliers and Nippers—

Button Pliers .... 75&5@75&10&5%
Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.

Gas pipe	7	8	10	12-in.
	$2.00	$2.25	$2.75	$3.50

Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button 80%
Improved Button ..... 75&10%
Cronk's 60%
No. 80 Linemen's 50%
Stub's Pattern 45%
Combination and others 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor. 40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston's Plumbs and Levels .... 60&10%
Disston's Pocket Levels ..... 60&10%
Stanley's Dulex 35%
Woods' Extension 33⅓%

Points, Glaziers'—

Bulk and 1-lb. papers .... lb. 9 ¢
½-lb. papers ..... lb. 9½¢
¼-lb. papers ..... lb. 10 ¢

Police Goods—

Manufacturers' Lists .. 25@25&5%
Tower's 25%

Polish—Metal, Etc—

Ladd Co.:
Putzade Liquid, ℔ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ℔ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (¼ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.00 .. 40%
Prestoline Paste 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75.

Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can .. each, $0.65
Ladd's Black Beauty Liquid, per 100 tins $6.75
Joseph Dixon, ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $1.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50

Window Polish—

Benj. P. Forbes:
Glasbright, No. 2, gal pails, ℔ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ℔ lb .. 20¢

Poppers, Corn—

1 qt. Square .. doz. $0.80; gro. $8.75
1 qt. Round .. doz. $0.90; gro. $10.00
1½ qt. Square. doz. $1.20; gro. $12.00
2 qt. Square .. doz. $1.50; gro. $15.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled 40%
Tinned ..... 30&10%

Powder—

Black Sporting:
Kegs (25 lb.) .. $5.00@5.50
Half Kegs (12½ lb.), $2.75@3.00
Quarter Kegs (6¼ lb.), $1.50@1.65
Canisters, pounds ... .25
Canisters, ½ pounds. .15
Canisters, ¼ pounds. .12
Discount to the trade, 10%.

NOTE.—Prices vary according to territory.

King's Semi-Smokeless:
Keg (25 lb bulk) $6.50
Half Keg (12½ lb bulk) $3.50
Quarter Keg (6¼ lb bulk) $1.90
Case 24 (1 lb cans bulk) $8.50
Half case (1 lb cans bulk) $4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Presses—

Fruit, Wine and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Seal Presses—

Morrill's No. 1, ℔ doz., $20.00 ..... 50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Nail, Etc.—

Cyclops 50%
Miller's Falls, No. 3, ℔ doz., $12.00 .. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) $5.50
No. 3B (small) $5.00
Smith & Hemenway Co.:
Diamond B 70%
Giant 50%
Staple Pullers, Utica and Davison 60%
Taylor Mfg. Co., Sampson Tack, ℔ doz. $0.40

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05
Hay Fork, Swivel or Solid Eye, doz., 4 in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz.	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz.	$0.16	.19	.23	.30
Inch	1¾	2	2¼	2½
Side, doz.	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Sash Pulleys—

Common Frame; Square or Round End, per doz., 1¾ and 2 in. ..... 17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in. .... 20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle ..... 17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4 ..... 19¢
Common Sense ..... ℔ doz., 20¢
Fox-All-Steel, Nos. 3 and 7, 2 in. ... ℔ doz. 50%
Grand Rapids All Steel Noiseless .. 50%
Niagara, No. 25, 1¾ in., 19¢; 2 in., 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 25....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—

Cistern 60%
Pitcher Spout ..... 75&5@75&10%
Wood Pumps, Tubing, &c. 50%
Barnes Dbl. Acting (low list) 50%
Barnes Pitcher Spout 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. $16.00
Daisy Spray Pump ..... ℔ doz. $6.50
Flint & Walling's Fast Mail Hand (low list) ..... 50&5%
Flint & Walling's Fast Mail (low list) ..... 50&5%
Flint & Walling's Tight Top Pitcher 80%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 50%
Myers' Pumps (low list) 50%
Myers' Power Pumps 50%
Myers' Spray Pumps 50%

Pump Leathers—

Plunger and Valve Leathers—Per gro.:

No.	1	2	3	4	
	$5.00	6.00	7.00	8.00	30@30&10%
Cup Leathers—Per 100:					
Inch	2½	3	3½	4	
	$5.00	7.00	9.00	12.00	

Punches—

Saddlers' or Drive, good, doz. 50@75¢
Spring, single tube, good quality $1.75
Revolving (4 tubes) .... doz. $3.50
Bemis & Call Co.'s Cast St'l Drive. 50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co.. 40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 40&10%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron, 2½@2¾&4%
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢ 30%
Cronk's:
Double Braced Steel Rail .. ℔ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ℔ 100 ft. $3.45
O. N. T., ℔ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ℔ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ℔ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ℔ ft., 11¢. 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail .. 60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—

NOTE.—Many goods are sold at net prices.

American Fork & Hoe Co.:
Lawn, ℔ doz., No. 24, $2.50; No. 20 ..... $2.25
Cronk's:
Steel Garden: Champion, ℔ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ℔ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ℔ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn, ℔ doz. $4.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ℔ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36-tooth .... ℔ doz. $5.00
Lawn Queen, 20-tooth .... ℔ doz. $2.85
Lawn Queen, 24-tooth .... ℔ doz. $3.00
Paragon, 20-tooth ..... ℔ doz. $2.65
Paragon, 24-tooth ..... ℔ doz. $2.75
Steel Garden, 14-tooth .... ℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

Rasps, Horse—

Disston's 75%
Heller Bros. ..... 70&5@70&10&5%
Liveright Bros.' Gold Medal. 70&10@75%
McCaffrey's American Standard ..... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

Razors—

John Engstrom Swedish 65%
Sharp Shaver 60%
Fox Razors, ℔ doz., No. 43, $24.00; No. 44, $30.00; No. 82, Platina, $36.00. } Dis. 50

Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo 20%
Aluminum, German Silv., Bronze. 25%
1240 N, 124 N 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN 20%
2904 P, 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 92084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%; 986 PN, 2904 N, 974 PN 25%
5009 PN, 5009 N 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR 20%
304 P, 304 PN, 00304 P, 00304 PN. 33⅓%

Registers—*List July 1, 1903.*

Japanned, Electroplated and Bronzed 70%
White Porcelain Enamel .. 50&10%
Solid Brass or Bronze Metal . 40%

Revolvers—

Single Action ..... 85¢@$1.00
Double Action, except 44 cal. $2.00
Double Action, 44 caliber ... $2.00
Automatic $4.00
Hammerless $4.50

Riddles, Hardware Grade

16 in. ..... *per doz.* $2.50@$2.75
17 in. ..... *per doz.* $2.75@$3.00
18 in. ..... *per doz.* $3.00@$3.25

Rings and Ringers—

Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.10	1.25	1.65 doz.

Hog Rings and Ringers—

Hill's Rings, per gro. boxes, $4.60@$4.75; per doz. boxes, 40@45¢
Hill's Ringers, Gray Iron, doz., 55@65¢
Hill's Ringers, Malleable Iron, doz. 85@95¢
Blair's Rings .. per gro. $5.50@$6.00
Blair's Ringers .. per doz. 65@70¢

Rivets—

Copper Rivets and Burrs 50%
Tinners' and Miscellaneous Rivets 80%

Bifurcated and Tubular—

Assorted in Boxes.

Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—

Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay 40%
Richards' Stay:
Handy Adj. and Reversible No. 53. 75¢
O. K. Adj. and Reversible No. 58. 50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 51 ..... 60%

Rope—

Manila, 7-16 in. diam. and larger: Pure ..... *lb.* 9¢
Sisal, 7-16 in. diam. and larger: Pure ..... *lb.* 7¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure ..... *lb.* 7½@7¾¢
Sisal, Tarred, Medium Lath Yarn: Pure ..... *lb.* 6½@6¾¢
Cotton Rope:
Best, ¼-in. and larger. 16½@18¢
Medium, ¼-in. and larger. 15@16¢
Common, ¼-in. and larger. 7½¢ *In coils, ½¢ advance.*
Jute Rope:
Thread, No. 1, ¼-in. and up. lb. ..... 5½¢
Thread, No. 2, ¼-in. and up, lb. ..... 5¢

Wire Rope—

Galvanized ..... 37½&2½%
Plain ..... 45&2½%

Ropes, Hammock—

Covert Mfg. Co.:
Jute, 35%; Sisal 20%

Rules

Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination 55%
Stationers' ..... 50@50&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

Sash Balances—

See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular 45%
Band ..... 50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames .30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1¾ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 50%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 3 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws. 30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws. 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c. .25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—
Atkins' Hack Saw Blades A A A .. 25%
Disston's:
Concave Blades 25%
Keystone Blades 35%
Hack Saw Frames 30%
Simonds, 25%; The Best, 35%; Culley 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades .... 40&10%
Griffin's Hack Saw Frames .. 35&5&10%
Griffin's Hack Saw Blades .... 35&5&10%
Star Hack Saws and Blades .... 15&10%
Sterling Hack Saw Blades .. 30&10&5%
Sterling Hack Saw Frames .. 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .. 10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%
Whitaker Mfg. Co.:
National Hand Blades, Hand Frames, Power Blades 40%

Scroll—
Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

Scales—
Union Platform, Plain. $2.10@2.80
Union Platform, Stpd. $2.20@2.30
Chatillon's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales 60%
The Standard Portables 40%
The Standard R. R. and Wagon ..... 50&10%

Scrapers—
Box, 1 Handle ..... doz. $1.85@2.10
Box, 2 Handle ..... doz. $2.35@2.50
Ship ... Light, $2.00; Heavy, $4.50
Chapin-Stephens Co., Box. .30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75 : 1¼, $3.00@3.25 ; 1¼, $3.50@3.75
Bench, Wood ..... 20@20&10%
Hand, Wood .... 70&10@70&10&10%
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—
Lag, Cone Point ..... 80&5%
Coach, Gimlet Point 80%
Hand Rail ..... 70&10@75%

Jack Screws—
Standard List ..... 70&10@75%
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—
Cut Tread, Iron, Brass or Bronze:
Flat Head or Round Head, 50@50&10%
Fillister Head ..... 40@40&10%
Rolled Thread, F. H. or R. H., Iron ..... 75&10%
F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%

Set and Cap—
Set (Iron) ..... 75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap ..... 70&10&7½%
Hex. Hd. Cap ..... 70&10&7½%
Rd. Hd. Cap ..... 50&7½%
Fillister Hd. Cap ..... 60&7½%

Wood—
List July 23, 1903.
Flat Head, Iron ..... 87½&5@.. %
Round Head, Iron .... 85&5@.. %
Flat Head, Brass ..... 80&5@.. %
Round Head, Brass .. 77½&5@.. %
Flat Head, Bronze .... 75&5@.. %
Round Head, Bronze. 72½&5@.. %
Drive Screws ..... 87½&5@.. %

Scroll Saws—
See *Saws, Scroll.*

Scythes— *Per doz.*
Plain Grass, Cutting Edge Polished ..... $6.25@$6.50
Clipper, Bronzed Web. $6.50@$6.75
Solid Steel, Web and Backs Polished ..... $7.00@$7.25
Bush, Weed and Bramble, Painted ..... $6.50@$6.75
Grain, Painted, Cutting Edge Polished ..... $8.25@$8.50
Clipper Grain, Bronze Web. $8.50@$8.75

Seeders, Raisin—
Enterprise ..... 25@30%

Sets— Awl and Tool—
Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .. 20&10%

Garden Tool Sets—
American Fork & Hoe Co.:
Rake, Shovel and Hoe, ℔ doz. sets, No. 3 P F $7.25

Sets, Nail—
Octagon ..... gro. $3.50@3.75
Buck Bros. 27½%
Mayhew's ..... ℔ gro. $9.00
Snell's Corrugated, Cup Pt. .... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. .... ℔ gro. $7.50

Rivet—
Regular list ..... 75@75&10%

Saw—
Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style $10.00
Special $16.25
Giant Royal Cross Cut ..... ℔ doz. $7.50
Royal, Hand ..... ℔ doz. $4.50
Taintor Positive ..... ℔ doz. $6.75

Shaving—
Fox Shaving Sets, No. 30 .....
℔ doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. $1.50
Mounted Kitchen Sand Stone, ℔ doz. $1.50
Natural Grit Carving Knife Hones, ℔ doz. $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. $1.50
Quick Edge Pocket Knife Hones, ℔ doz. $2.50
} 50%

Skate—
Smith & Hemenway Co., Eureka .. 50%

Shaves, Spoke—
Iron ..... doz. $1.25
Wood ..... doz. $2.00
Bailey's (Stanley R. & L. Co.) 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%

Shears—
Cast Iron .. 7 8 9 in.
Best ... $16.00 18.00 20.00 gro.
Good ... $13.00 15.00 17.00 gro.
Cheap .. $5.00 6.00 7.00 gro.
Straight Trimmers, &c.:
Best quality Jap ..... 70&10&5%
Best Quality Nickel .. 60&10&5%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
Columbian Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' 25%

Tinners' Snips—
Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 50&10%
Acme Cast Snips ..... 40@45&5%
Forged Handles, Steel Blades, Berlin 50%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel. 50%
Niagara Snips 40%
P. S. & W. Forged Handles, 25%; W. R. W. 50%
J. Wiss & Sons Co.:
Wiss Forged Steel 25%

Pruning Shears—
Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ℔ doz., $12.00 ..... 25%
J. T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, 60&10%

Sheaves—Sliding Door—
Reading 40%
R. & E. list 15%

Sliding Shutter—
Reading list 40%
R. & E. list 15%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 60&5%
Club, Rival, 65&5%; First Quality 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
Union League, 10 and 12 gauge, Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge 20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade .. 20%

Shells, Loaded—
Loaded with Black Powder .. 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders. 40&5%
Arrow, Smokeless Powders. 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ... 40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

Dixie, 14 x 20 in.	$4.05	$5.05
Dixie, 10 x 14 in.	4.25	5.45
Dixie, 7 x 10 in.	5.25	6.70

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron ..... per keg. $4.10
Steel ..... per keg. $3.85
Burden's, all sizes ..... ℔ keg $3.90

Shot—
25-lb. bag.
Drop, up to B $1.80
Drop, B and larger 2.05
Buck 2.05
Chilled 2.05
Dust 2.30

Shovels and Spades—
Association List .. 40&7½%@40&10%
Avery Stamping Co. 40%

Snow Shovels—
Long Handle ..... $2.50@$2.75
Wood and Mall, D Handle, $2.65@$2.90

Sieves and Sifters—
Hunter's Imitation, gro $9.50
Hunter's Genuine, per gro .. $12.00

Sifters, Ash—
Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ℔ doz. $39.00

Sieves, Seamless Metallic
—Per dozen.—

Mesh	14	16	18	20
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested .... doz. $0.90@0.95
Mesh 20, Nested .... doz. $1.00@1.05
Mesh 24, Nested .... doz. $1.30@1.40

Sinks, Cast Iron—
Painted, Standard list:
12 x 12 to 22 x 36 in. 60%
20 x 24 to 24 x 50 in. 50%
24 x 60 to 24 x 120 in. 30%
Barnes' low list 60%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron ..... 70@75&10%
Steel ..... 40@45%

Slates, School—
Factory Shipments.
"D" Slates ..... 30@30&10%
Eureka, Unexcelled Noiseless .. 60&7 tens.
Victor A, Noiseless .60&¼ tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German ..... 40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan 40%
Jockey 25%

Snaths—
Grass Scythe ..... 50@50&5%

Snips, Tinners—See *Shears.*

Spoons and Forks—
Silver Plated—
Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co:
1847 Rogers Bros. ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 55&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous
German Silver ..... 60@60&5%

Tinned Iron—
Teas ..... per gro. 50@55¢
Tables ..... per gro. $0.90@$1.00
Atlas Mfg. Co.:
Tea Spoons, ℔ gro. ..... 50¢@55¢
Table Spoons, ℔ gro. ..... $0.90@$1.00

Springs— Door—
Bardsley's Spring and Check 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman Door and Gate 10%
Reliance (Coil) ..... 40&10%
Star (Coil) 35%
Torrey's Rod, 39 in. ..... ℔ doz. $1.00

Carriage, Wagon, &c.—
1¼ in. and Wider: Per 100 lb.
Black ..... $4.75@5.00
Half Bright ..... $4.75@5.00
Bright ..... $5.25@5.50
Painted Seat Springs:
1½ x 2 x 26 .... per pair. 45@47¢
1½ x 3 x 28 .... per pair. 68@71¢

Sprinklers, Lawn—
American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ℔ doz. $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—
Nickel plated .. } List Jan. 5, 1900.
Steel and Iron . } 80&5@80&10%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Diston's Try Squares and Bevels, Rosewood Handle, 60 & 10%; Iron Stock and Bevel 15%

Squeezers, Lemon
Wood, Porcelain Lined:
Cheap ..... doz. $1.00
Good Grade ..... doz. $1.25
Tinned Iron ..... doz. $0.75@1.00
Iron, Porcelain Lined ... doz. $1.75
Victor, ℔ gro. $9.00

Staples—
Barbed Blind ..... 85&5@85&10%
Electricians' ..... 80&10&10@85%
Fence Staples, Polished, $2.05 ..
Galvanized $2.35
Poultry Netting Staples .....
per lb. 3¼@3¼¢

Steels, Butchers'—
Dick's 30%
Foster Bros. 30%

Steelyards— .... 30@30&10%

Stocks and Dies—
Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock .. 25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plate 25%

Stoners, Cherry—
Enterprise ..... 25@30%

Stones, Axe—
Pike Mfg. Co., Axe Stones (all kinds) 33⅓%

Glass Cutters' Stones—
Pike Mfg. Co., Glass Cutters' Stones and Supplies 40%

Stones, Oil, &c.—
Pike Mfg. Co., 1907 list: ℔
Arkansas St., No. 1, 3 to 5½ in. $2.80
Arkansas St., No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India Oil Stones (entire list) .. 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 40%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks .. 40%
Hindostan No. 1, B'g'lar. ℔ lb 5¢
Hindostan No. 1, Small .. ℔ lb 10¢
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 6¢

} 25%
} 25%

Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%
Lectro (Artificial), ℔ gro., $12.00 33⅓%
$12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro. $18.00 ..... 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro, $9.00

Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%

Door—

Chapin-Stephens Co..... 50@50&10%

Plane—

Chapin-Stevens Co..... 20%

Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points..doz.55¢
All Steel Socket...doz.$2.00@2.25
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00....20%

Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

Sweepers, Carpet—

NOTE.—Leading Manufacturers give the following rebates from list prices: 50c per dozen on three-dozen lots: $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks.90&25@—%
American Cut Tacks..90&25@—%
Swedes' Cut Tacks.L..90&30@—%
Swedes' Upholsterers'.90&35@—%
Gimp Tacks.....90&35@—%
Lace Tacks.....90&35@—%
Trimmers' Tacks.....90&30@—%
Looking Glass Tacks.....65@—%
Bill Posters' and Railroad Tacks, 90&40@—%
Hungarian Nails.....80@—%
Finishing Nails.....70@—%
Trunk and Clout Nails.75&5@—%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks, 90&6 tens@—%

Se also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.:

Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
110	$5.00	$5.75

Tapes, Measuring—

American Asses' Skin....50@—%
Patent Leather.....25@30&5%
Steel ..... 33⅓&5%
Chesterman's .....25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@33⅓%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lb.....$2.55@$2.80

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c.....30@35%

Ties, Bale—Steel Wire—

Single Loop..... 80½&10%
Monitor, Cross Head, &c. 70&8½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White..... 20@20&5%

Haying—

Myers' Hay Tools..... 50%

Ice Tools—

Gifford-Wood Co..... 15%

Miniature—

Smith & Hemenway Co.'s. Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 30%

Ship—

L. & I. J. White..... 25%

Torches—

Hammers, Engine, ℔ doz..... $4.50

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz., $1.15@$1.25; gro....$11.50@12.00
Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50

Game—

Imitation Oneida.....75@10%
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5%
Stop Thief..... 60%
Tree Trap..... 60%
Hector ..... 75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 12¢
Mouse, Round or Square Wire, doz.85@90¢
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

	Crate lots.	Small lots.
No. 1, Rat.....	$11.50	$14.50
No. 3, Rat.....	$5.75	$6.50
No. 3½, Rat.....	$4.70	$5.25
No. 5, Mouse.....	$2.25	$3.00

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz.....$0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes..... ℔ gro. $6.00
Woodrough & McParlin, Plastering.25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

Tubs, Wash—

M'f'gr's list, price per gross.

No.	0	1	2	3
Galvanized	$67	$79	$89	$99

10&7½&5&7½%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls .21@23¢
No. 12, ¼ and ½-lb. Balls .19@21¢
No. 18, ¼ and ½-lb. Balls .16@18¢
No. 24, ¼ and ½ -lb. Balls. 15½@17½¢
No. 36, ¼ and ½-lb. Balls. 15@17¢
Chalk Line, Cotton ¼-lb. Balls ..... 24@29¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz..... 8½@19¢
Cotton Wrapping, 5 Balls to lb., according to quality..13½@19¢
American 2-Ply Hemp, ¼ and ½-lb. Balls..... 12½@15¢
American 3-Ply Hemp, 1-lb Balls ..... 13½@16¢
India, 2-Ply Hemp, 1½-lb. Balls, Balls (Spring Twine)...7½@9¢
India 3-Ply Hemp, 1-lb. Balls 7½@9¢
India 2-Ply Hemp, 1½-lb. Balls, 7@8½¢
2, 3, 4 and 5-Ply Jute, 1½-lb. Balls ..... 9@11¢
Mason Line, Linen, ½-lb. Bls.17¢
No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢
Wool, 3 to 6 ply....B 6¢; A 7½¢

Vises—

Solid Box.....50&10&5@60&5%

Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co., 40&5%; Slide 65%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists' 40%
Star, Solid Jaw, Machinists'..... 40%
Hollands':
Machinists' ..... 40@40&5%
Kevatone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher 40%
Parallel Bar..... 15%
Perfect, 15%; Lightning Grip..... 15%
Merrill's 25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' 33⅓%

Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's 40%
Star Solid Jaw Woodworkers'....60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

Wads—*Price per M.*

B. E., 11 up.....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up.....$1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50

Dis. 15%

Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled .....45&10%
Ground .....50&5%
Plain or Unground.....60%
Country Hollow Ware, per 100 lbs .....$2.75@$3.00
White Enameled Ware:
Maslin Kettles.....65&10%
Covered Wares:
Tinned and Turned.....35&10%
Enameled .....45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....33⅓%
El-an-ge ..... 60&10%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc. Porcelained 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

No. ℔ doz.
800—Brass King, Single Surface, Open Back..... $2.80
862—White Hen, Spiral Grimp Glass $3.35
964—Royal Blue Enamel, Single Surface, Ventilated Back..... $3.35
172—Our Best, Single Zinc, Soap Drainer $3.35
722—Soap Saver, Single Zinc, Iron Top $3.35
100—Northern Queen, Single Zinc, Perforated, Open Back..... $3.00
134—Universal, Single Zinc, Extra Family Size, Ventilated Back....$2.80
760—Banner Globe, Single Zinc, Ventilated Back..... $2.25
57—Peerless, Double Zinc, Spring Protector $3.70
56—Red Cross, Double Zinc, Swing Protector $3.60
17—North Star, Solid Zinc, Swing Protector $3.60
797—Jewel, Single Zinc, Pail Size.$1.25

Washers—Leather, Axle—

Solid .....90@90&10%
Patent .....90@90&5%
Coil: ⅞ 1 1¼ 1¼ inch. 9¢ 10¢ 11¢ 14¢ per box.

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$4.90 4.00 2.70 2.50 2.30

The above prices are based on $6.50 off list.

In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. disct.; in 100 lb kegs, add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

Cast Washers—

Over ½-inch, barrel lots, per lb. 1½@1¾¢

Wedges—

Oil Finish.....lb., 2¼@2¾¢

Weights—Hitching—

Covert Mfg. Co..... 30&2%

Sash—

Per net ton, f.o.b. factory:
Eastern District.....$20.00@—
Western and Central Districts .....$20.50@—

Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery 75%

Well—

8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....72½&10&71½%
10 to 18.....72½&10&10%
19 to 26.....75&10&10&2½%
27 to 36.....77½&2&71½%
Galvanized:
6 to 9.....72½&10%
10 to 14.....72½&10&5%
15 to 16.....72½&10&5%
17 to 18.....72½%
19 to 26.....70&5&2½%
27 to 36.....65&10&10%
Coppered:
6 to 9.....65&10&10%
10 to 14.....70&10&5%
15 to 18.....65&10&10&10%
19 to 26.....70&5&2½%
27 to 36.....72½&10&2½%
Tinned:
6 to 18.....67&10&10%
Brass .....16¼¢ lb., base
Copper .....15¾¢ lb., base
Cast Steel Wire.....50%

Spooled Wire—

Annealed and Tinned.75@75&10%
Brass and Copper....70@70&10%
Retailers' Assortments, per box, $1.90@$2.10

Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods.....90&40%
Brass Wire Goods, 90&40@90&40&10%
Brass Cup and Shoulder Hooks, 85&10%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&10@80&10&5%
Screen Cloth, 12 Mesh, Per 100 sq. ft.: Painted, $1.30; Galvanized, $1.90; 14 Mesh, Bronze $6.50
Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.
Nos. 2, 2½ and 3 Mesh....$2.75
Nos. 4 and 5 Mesh.....$3.00
No. 6 Mesh.....$3.25
Nos. 7 and 8 Mesh.....$3.75

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .....80&5@80&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches, 70&5@70&10%
Drop Forged S.....45@45&5%
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's 40%
Coes' Genuine Knife Hdl...40&10&5&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle 70%
Gem Pocket..... 30%
Hercules 70%
W. & B. Machinist:
Case lots..... 50&10%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W...50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists'..... 50&10%
Wizard Adjustable Ratchet..... 50%

Fruit Jar—

Beni. P. Forbes, Triumph, ℔ gro.. $7.50; per doz..... $0.90

Wrought Goods—

Staples, Hooks, &c., list March 17, '92.....90@—%

Zinc—(*Cask lots at mill.*)

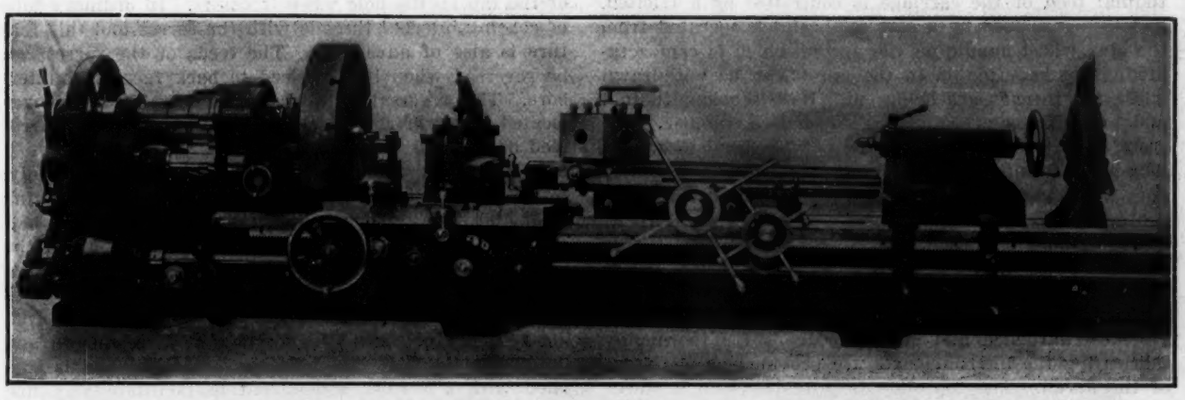
Sheet.....per 100 lb., $7.00

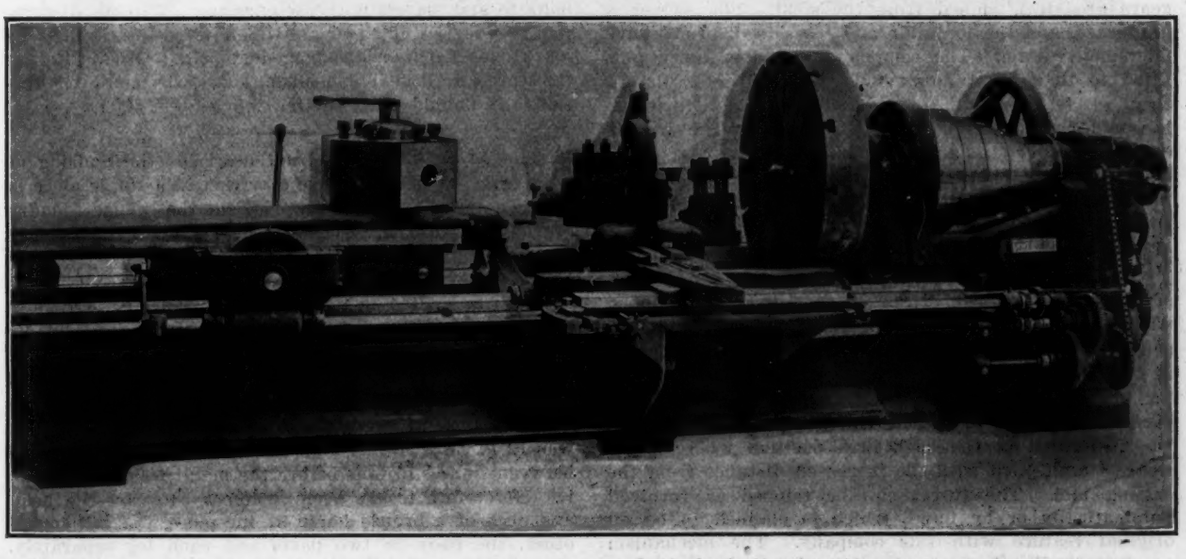
THE IRON AGE

New York, Thursday, December 24, 1908.

A Heavy 36-In. American Lathe.

What is described as the largest lathe of its type and equipment that has ever gone out of Cincinnati is the 36-in. heavy pattern triple geared lathe, with turret on the shears, of which front and rear views appear herewith. This tool is considered by the American Tool Works Company, Cincinnati, Ohio, to be one of the finest examples of design and workmanship which it has produced. The alignments are declared to be perfect, and the design such as to facilitate its operation. Being steel geared throughout and of very heavy construction, it is capable of doing extremely heavy work with a high degree of accuracy.





Front and Rear Views of the 36-In. Heavy Pattern Lathe, with Triple-Geared Head and Turret on Shears, Built by the American Tool Works Company, Cincinnati, Ohio.

This 36-in. lathe swings 38 in. over the V's and 26 in. over the carriage, and is built in even lengths of bed, from 12 ft. to any desired length. The standard length is 12 ft., a bed of which length takes between centers 4 ft. 9 in. The bed is of deep and exceptionally heavy section and of the company's drop pattern, which gives 2 in. additional swing. Cross box girders at short intervals the length of the bed contribute to its stiffness, and the rack cast in the center for engaging the pawl of the tailstock further supplies strength.

The headstock is equipped with triple gears and is firmly bolted to the bed. The cone has five steps, of which the largest is 20 in. in diameter by 4¼-in. face. The spindle is of high carbon special steel, ground, and has a 2⅝-in. hole through it. The bearings are of phosphor bronze and have improved oiling facilities and means of adjusting. The triple gears are of the slip gear type and are shifted by rack and pinion at the front of the head. The back gear is automatically disengaged when the pinion is slipped into engagement with the internal gear on the face plate. The internal gear is planed integral with the face plate, and the pinion is cut from the solid in one piece with the shaft. All of the gears involved are of coarse pitch and wide face. The 15 speeds obtained are in geometrical progression, and the ratio of gearing is high and of great power.

The tailstock is of massive proportions and has a large continuous bearing on the ways. It is moved along the bed by a crank and gear engaging a rack under the front V. For turning tapers it is adapted to be set off center. Its base is clamped to the bed and further secured against displacement by a pawl engaging the rack in the center of the bed. The spindle of the tailstock has exceptionally long travel and is actuated by a hand wheel screw.

The improved quick change gear mechanism provides 32 changes for feeding and thread cutting, which can be made while the machine is running. The feed box on the front of the machine beneath the headstock supplies three changes for each change of gears on the quadrant on the head end of the lathe. The gears are inclosed

wherever possible, and all loose running gears are bronze bushed. The range of threads is from 1 in 4 in. to 16 threads per inch, including the 11½ to the inch pipe thread. The feeding range is 6.4 to 92 cuts per inch. The device is operated by a revolving nut at the right of the gear box beneath the head, which moves a sliding key engaging two opposed gears, each being one of a cone of gears contained in the gear box. The feed or screw pitches thus obtained are multiplied through the compound gears on the quadrant at the end of the head, so that it is necessary to change only one gear on the quadrant for each additional thread. By this arrangement flexibility is secured, making it possible to cut practically an unlimited range of special worms or threads either finer or coarser than the range indicated above, by providing the necessary gears.

The apron is tongued and grooved and firmly bolted to the carriage, extending its entire length. It is double, giving all shafts a double bearing. The longitudinal feed of the carriage is controlled by a friction, and the cross feed by a saw tooth clutch operated from the star wheel handle on the apron, which is cam actuated. The rack pinion in the apron can be withdrawn while the threads are being cut. Both the longitudinal and cross feeds are reversed through a tumber plate from the front of the apron, not at the headstock. On long bed lathes this feature is of value, since the operator does not have to leave his work. The half nuts are also controlled by a lever on the front of the apron. All of the gears and pinions are of steel, of wide face, coarse pitch and cut from the solid, and bronze bushed where they run loose. The bevel gears never disengage, which avoids trouble from breakage, and all studs are of crucible steel hardened and ground. Means for thoroughly lubricating the internal parts are provided on the front of the apron. The top slide is provided with a power angular cross feed with 13½ in. of travel. The miter gears are steel, planed from the solid. The swivel is graduated, and the top slide and cross feed screws have micrometer dials. The compound rest has taper gibs fitted to it, so that no amount of strain will disturb them. It is fitted with a four-stud tool holder, in which the tool rests on a serrated steel base. The tool is clamped by four nuts and two straps which may be placed in either direction. The compound rest may also be fitted with a double T slotted top slide and equipped with regular posts set in tandem, which prevents slipping of the cutting tool under heavy strains.

The turret on the shears is of a new design, possessing several novel and important features. It is equipped with the company's new indexing mechanism, which is self-compensating for wear. This mechanism is located at the top of the turret top slide, which brings the locking pin very near to the tool. This construction is regarded as superior to that in which the indexing mechanism is located at the back in a position where slight wear is multiplied with the increased distance from the cutting tool. The turret can be tripped or revolved automatically or by hand, which is claimed to be an original feature with this company. The mechanism can be set so as to be inoperative when it is desired to run the slide back to its extreme limit without withdrawing the lock pin or revolving the turret. This action is accomplished by the small lever shown near the large pilot wheel in the front view. The turret top slide is supported on its outer end by a bracket attached to the front of the slide which travels along the V's of the bed and through its support eliminates all tendency to spring under a long reach, which is another feature claimed to be original with the company. The bracket can be removed should the work require the turret slide to pass over the carriage of the lathe. The bottom slide of the turret is moved along the bed by a pilot wheel shown at the rear end. It is clamped to the bed by two eccentrics, one at the front and the other at the rear. It is further secured from slipping due to severe end thrust by a pawl dropping from the turret which engages a ratchet toothed rack cast in the center of the lathe bed.

Eight feeds are provided for the turret, ranging from 0.005 to 0.162 in. per revolution of the spindle. These feeds are entirely independent of the regular carriage and apron feeds. The turret feeds are controlled by the star knobs carrying index dials which are shown one directly above the other on the front of the bed near the speed box. The dials and pointers thereon indicate at once the feed in inches and less, and all changes can be made while the lathe is running. The star knobs operate through shafts extending through the bed to the quick change turret feed box at the rear of the headstock, which is provided with a cover. Provision is made on the compound rest slide to quickly attach the turret top slide. This is valuable when wishing to impart to the turret the feeds of the carriage such as might be desirable in large tapping operations. In such a case the tap gets a positive lead, since the screw cutting mechanism can be engaged in the apron and the proper lead thereby transmitted to the turret slide carrying the tap. In this manner the tap is relieved of all dragging at the start and the positive lead prevents the reaming tendency of the tap on the hole when it enters. In ordinary jobs of chasing internal threads with the turret tool this feature is also of advantage. The feeds of the turret can be reversed when it is desired to back face or counterbore. This reversal of the feeds is controlled by a lever located on the driving sprocket of the quick change turret feed box.

The regular equipment of the lathe includes steady, follow and full swing rests, and countershaft having tight and loose pulleys 24 in. in diameter for a 5-in. belt and intended to run at 150 rev. per min., and all of the necessary wrenches. An improved taper attachment is an extra supplied when ordered. This attachment is of heavy construction and is designed to eliminate all binding tendency on the parts, thereby insuring smooth and uniform action. It is supported on the bed and is supplied with a vernier attachment to facilitate very fine adjustment. It is graduated and the entire attachment bolts to and travels with the carriage. Without disturbing the degree of taper to which it is set, it may be quickly engaged or disengaged at will. Other alternatives are an all geared headstock, electric motor application and double or triple friction countershaft.

The *Iron Molders' Journal* describes the pouring of "the largest piece of bronze ever cast in a single piece in this country if not in the world," at the bronze foundry of the Gorham Mfg. Company at Elmwood, R. I. The casting is of the horse which forms part of the equestrian statue of Gen. Phil Sheridan at Washington, D. C. The bronze was melted in more than a dozen large crucibles and was poured from each of these in turn into a ladle which finally contained 6000 lb. The metal was first poured into a feeding basin in the top of the flask, and when this was filled two plugs were withdrawn and the molten bronze allowed to flow into the mold. The flask was 12 ft. long, 6½ ft. high and 8 ft. wide, and weighed between 70 and 75 tons before the metal was poured into it. Heretofore it has been customary to cast the head and neck of a bronze horse in one piece, the tail in another, the body in two parts and each leg separately, riveting the parts and then brazing them together.

The Lewis Foundry & Machine Company, Pittsburgh, works at Groveton, Pa., is building two No. 3 motor driven roll lathes for the Cambria Steel Company, Johnstown, Pa.; a No. 3 motor driven lever shear for the Joseph Iron Company, Aurora, Ill.; a 14-in. mill with pinions and two 16-in. mills with the necessary bed plate and other equipment, including a No. 4 lever shear, for the Lebanon Valley Iron Company, Lebanon, Pa., and a No. 5 lever shear for the American Horse Shoe Company, Phillipsburg, N. J.

The weekly letter of the United Metal Trades Association of the Pacific Coast reports wages in Japanese shipyards as follows for 10 hours' work a day: Boiler makers, 98 cents; Calkers, 49 cents; punchers, 46 cents; screw makers, 47 cents; finishers, $1; molders, 87 cents; electricians, 57 cents, lathe workers, 90 cents; coppersmiths, 96 cents; machinists, 51 cents; blacksmiths, $1.23; ironworkers, $1.32, and iron molders, $1.02.

Whiting Special Gantry Cranes.

A special gantry crane equipment adapted for lifting and unwheeling locomotives is shown in the accompanying illustration. Six of these cranes were recently furnished the Great Northern Railway, St. Paul, Minn., by the Whiting Foundry Equipment Company, Harvey, Ill. The only work of installing required by the purchaser was the laying of rails for the gantry cranes to run upon. The load is hoisted by steel wire hoisting rope winding on drums driven through a system of spur and worm gearing by an electric motor. Although each of these cranes has a capacity of 100 tons its hoisting motor is of comparatively small size, as only a low speed is required. The adjustment of the cranes is by hand.

The following dimensions give some idea of the size of the equipment: From center to center of the runway rails the span is 14½ ft.; the clearance inside of the legs of the gantry is 13 ft.; from the top of the rail to the under side of the girders the hight is 20 ft.; the distance from center to center of the hooks is 11 ft.; the lift or travel of the hook is 14½ ft.

Whiting Gantry Cranes as Used by the Great Northern Railway for Unwheeling Locomotives.

The trucks consist of structural steel members, provided with bearings for the main axles, to which are fitted double flanged cast iron wheels. The hoisting gearing is supported on the bridge girders by structural framing. The drums are of a design which insures equal distribution of the load upon the girders. Throughout the design a factor of safety of 5 has been maintained. All parts are easily accessible for oiling and repairing, and the electrical work is in conformity to the Underwriter's standards. The motor is fitted with an improved automatic electric brake, which is operated by an electric solenoid in circuit with the hoisting motor. When the electric current is cut off the brake is automatically applied by springs, and is released automatically when current flows through the circuit to the hoisting motor.

The New Castle Forge & Bolt Company, New Castle, Pa., manufacturer of car forgings, chains, bolts, nuts, rivets and wrought washers, intends to increase its preferred capital stock $150,000 to allow of additional working capital. The stockholders will meet on January 26, 1909, to act upon the proposed increase. No important additions to the plant are contemplated at present.

Westinghouse Machine Company Officials.

A number of changes have been made among directors of the Westinghouse Machine Company, Pittsburgh. The new board as elected consists of H. C. Bughman, J. D. Callery, I. W. Frank, H. S. A. Stewart, William McConway, Horace E. Smith, John F. Wallace, H. H. Westinghouse and George Westinghouse. The election removes from the board Wilson A. Shaw of the Bank of Pittsburgh, Robert Wardrop of the People's Nationad Bank, J. C. Chaplin of the Colonial Trust Company and W. H. Donner. It is understood that the bankers who were elected to the board immediately after the company was taken out of the hands of the receiver find they are unable to give the time required for the conduct of the business. Mr. Donner was elected vice-president and general manager of the company, and it is stated that, since he is no longer a member of the board, his place will be filled by a director.

The directors organized by electing the following: George Westinghouse, president; H. H. Westinghouse, vice-president; Herbert T. Herr, general manager; T. L. Brown, treasurer and assistant secretary; C. V. Holmes, assistant treasurer; T. S. Grubbs, secretary and auditor; J. G. McCall, assistant auditor; J. D. Callery, H. C. Bughman, William McConway and H. H. Westinghouse, Executive Committee. It is understood that H. H. Westinghouse, brother of the president, will devote a large part of his time to the management of the affairs of the company. This will probably necessitate his removal from New York to Pittsburgh.

The Westinghouse Machine Company is one of the best of the Westinghouse concerns. It is capitalized at $10,000,000, and its embarrassment about a year ago was only of a temporary character. It was in the hands of receivers only a short time, but W. H. Donner, one of the directors and who also had been a receiver, continued in charge of the plant for a time. E. E. Keller, another of the receivers, who was the vice-president of the company, has been succeeded in that position by H. H. Westinghouse.

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Columbian and Domestic.....33⅓%
North's 10%
Upson's Patent, ₱ gro., $29.90.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....10%
Ives' Stop Bead Screws and Washers 10%
Taplin's Perfection.....10%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs .....$2.00@$3.00

Anvils—American—
Eagle Anvils.....₱ lb @8 ¢
Hay-Budden, Wrought.....9½@9¾ ¢
Trenton .....₱ lb 9½@9¾ ¢

Imported—
Swedish Solid Steel Paragon, ₱ lb .....10@10½ ¢
Swedish Solid Steel Sisco, Superior, ₱ lb .....10@10½ ¢
Peter Wright & Sons, ₱ lb, 84 to 340 lb. 11¢; 350 to 900 lb, 11½ ¢.

Anvil, Vice and Drill—
Millers Falls Co., $15.00.....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....10%

Augers and Bits—
Com. Double Spur....75&10@80%
Jennings' Patn., Bright.65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40&10%
Ford's Auger and Car Bits.....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jenningas' list, 25&7½%
No. 30, R. Jennings' list.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....15%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Swan's .....65&10@70%
Swan's, Jennings' Pattern.....50%
Wright's Jennings' Bits.....50%

Bit Stock Drills—See *Drills, Twist.*

Expansive Bits—
Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....60&10%
Ford's, Clark's Pattern...60&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00.....60&10%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dbl. Cut.....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames .....20&10%
Universal 20%

Ship Augers and Bits—
Ship Augers.....40&10@—%
Ford's .....35%&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' .....33⅓&7½%
Snell's 48%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket.gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights: Per doz.
First Quality.....$4.75@5.00
Second Quality.....$4.25@4.50
Double Bit, base weights:
First Quality.....$7.00@7.50
Second Quality.....$6.50@6.75

Axle Grease—
See *Grease, Axle.*

Axles—*Iron or Steel.*
Concord, Loose Collar...4¼@4½¢
Concord, Solid Collar....4½@5 ¢
No. 1 Common, Loose...3½@4 ¢
No. 1½ Com., New Style.4¼@4¾¢
No. 2 Solid Collar.....4¼@4¾¢
Half Patent:
Nos. 7, 8, 11 and 12.....70%
Nos. 13 to 14.....70%
Nos. 15 to 18...70&10@70&10&5%
Nos. 19 to 22...70&10@70&10&5%

Boxes, Axles—
Common and Concord, not turned .....lb., 5@6¢
Common and Concord, turned, lb., 6@7¢
Half Patent.....lb., 9½@10¢

Bait—Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—Sash—
Caldwell new list.....50&10%
Pullman .....50&10%

Spring—
Light Spring Balances..60@60&5%
Chatillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50&10%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢

Towel—
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

Beam, Scale—
Scale Beams.....40%
Chattillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned.....₱ doz. $1.50

Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $1.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

Bellows—
Blacksmith, Standard List:
Split Leather.....60&10@65%
Grain Leather.....50@50&10%

Hand—
Inch..	*6*	*7*	*8*	*9*	*10*
Doz..	*$500*	*5.50*	*6.00*	*6.50*	*7.50*

Molders—
Inch..	*10*	*12*	*14*	*16*
Doz..	*$7.50*	*9.00*	*12.00*	*15.00*

Net Prices

Bells—Cow—
Wrought Cow Bells.....75%
Jersey .....75&10%
Texas Star.....50%

Door—
Home, R. & E. Mfg. Co.'s.....55&10%

Hand—
Polished, Brass.....60@60&10%
White Metal.....60@60&10%
Nickel Plated.....50&10%
Swiss .....50&10%
Cone's Globe Hand Bells.....33⅓@35%

Miscellaneous—
Farm Bells.....lb., 2¼@2½¢
Church and School....60@60&10%

Belting—Leather—
First Quality, Ex. Hy., Strictly Short Lap.....60&10%
Standard .....70&10@70&10&5%
Light Double.....75&10%
Cut Leather Lacing.....45@50%
Leather Lacing Sides, per sq. ft.25¢

Rubber—
Competition (Low Grade).....70&10@75%
Standard .....60&10@70%
Best Grades.....40@50%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son & Co.'s 1908 list:
Chain, Parts, Spokes.....50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—
Common Wooden.....75@75&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—
Paper and Wood Lined.....55%
Embossed 55%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....33⅓&10%

Bolts
Carriage, Machine, &c.—
Common Carriage (cut thread):
⅝ x 6 and smaller.....75&5%
Larger and longer.....70&5%
Common Carriage (rolled thread):
⅝ x 6, smaller and shorter, 75&10&5%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends, with C. & T. Nuts, 70&10%
Machine (Cut Thread):
⅝ x 4 and smaller.....75&10%
Larger and longer.....70&10%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knobs:
Inch ...	*3*	*4*	*5*	*6*	*8*
Per doz..	*$0.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:
Inch	*6*	*8*	*10*
Per doz.....	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:
Inch	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.40*	*1.65*

Cast Iron Flat Shutter, Jap'd, Brass Knobs:
Inch	*6*	*8*	*10*
Per doz.....	*$0.75*	*.95*	*1.25*

Wrought Barrel Japanned, 80&10@80&10&5%
Barrel Bronzed.....60&10%
Spring .....70&10@70&10&10%
Shutter .....50&5@50&10&5%
Square Neck.....75@75&10%
Square .....70&10&10@80%
Ives' Mortise.....10%
Ives' Wrought Metal.....10%

Expansion—
F. H. Evans' Crescent.....40@60%
Richards Mfg. Co.....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type.....40%
Star, Machine, Single Wedge....60%
Star, Machine, Double Wedge....60%
Steward & Romain Mfg. Co.:
Style No. 13, Double.....60%
Style No. 1, Single.....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw.....66⅔%

Plow and Stove—
Plow .....65&5@70%
Stove .....85@85&5%

Tire—
Common Iron.....80%
Norway Iron.....80%
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84..82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '84.....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1881..82½%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Bung—
Borers Bung, Ring, with Handle:
Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.80*	*5.60*	*6.40*	*8.00*
Inch.....		*2¼*	*2½*	
Per doz.....		*$8.65*	*11.50*	

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme .....15&10%
Perfection 40%
Seavey 45%

Braces—
Comman Ball, American....$1.50
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 61, 166, 206, 614.....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat....60&10%

Brackets—
Wrought Steel.....75&10&5@80%
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel.....75@75&10%
Griffin's Folding Brackets.....70&10%
Taplin Victor Handy Egg Beater Bracket .....₱ doz. $1.50

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Wire Goods Co.....75%

Buckets, Galvanized—
M'fr's list, price per gross.
Quart..	*10*	*12*	*14*
Water, Reg...	*26.85*	*29.50*	*33.50*
Water, Hvy...	*45.35*	*48.00*	*52.00*
Fire, Rd. Btm.	*32.00*	*34.65*	*38.65*
Well	*37.35*	*41.35*	*45.35*

10&7½&5&5%

Bull Rings—See *Rings, Bull.*

Butts—Brass—
Wrought, High List, Oct.26,'06.65%
Cast Brass, Tiebout's.....40&10%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel—Bright.
Light Narrow, Light Reversible .....70&5%
Reversible and Broad..70&5%
Loose Joint, Narrow, Light Inside Blind, &c.....70%
Back Flaps, Table Chest..65% Japanned.
Light Narrow, Loose Pin, 40&5%
Light Narrow, Ball Tip..60%
Broad .....40&5%
Steeple Tipped.....70%
Ball Tipped.....70%

Extra, #—